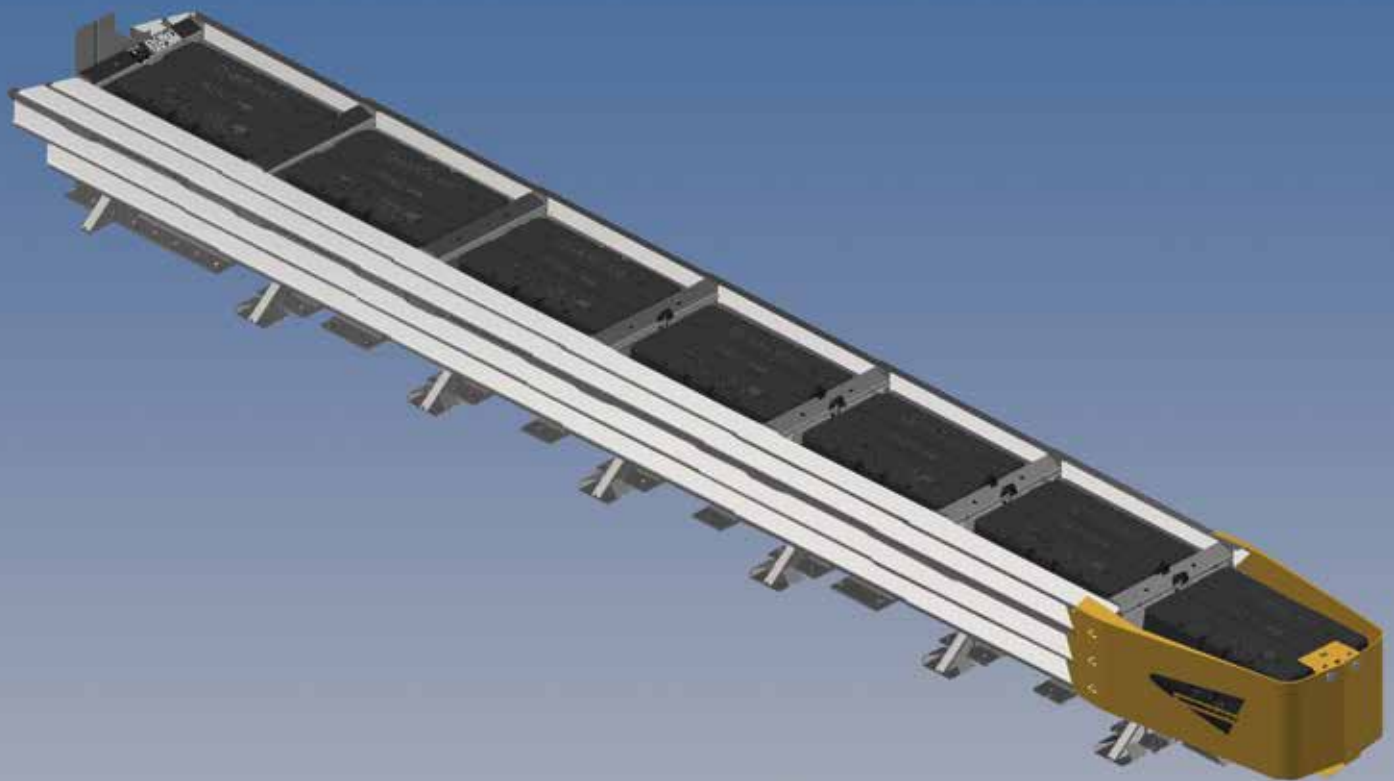


QuadGuard® M10 24"

Product Description Assembly Manual



INGAL
CIVIL PRODUCTS
A valmont COMPANY



TRINITY
HIGHWAY

Ahead of the Curve®

QuadGuard® M10 610mm 24”

The QuadGuard® M10 has been tested pursuant to American Association of State Highway and Transportation Officials (“AASHTO”) Manual for Assessing Safety Hardware (“MASH”) specifications. The QuadGuard® M10 has been deemed eligible for federal-aid reimbursement on the National Highway System by the Federal Highway Administration (“FHWA”).

Product Description Assembly Manual



15601 Dallas Parkway
Suite 525
Addison, Texas 75001



Warning: The distributors, owners, contractors, lessors, and lessees are **RESPONSIBLE** for the assembly, maintenance, and repair of the QuadGuard® M10. Failure to fulfill these **RESPONSIBILITIES** could result in serious injury or death.



Important: These instructions are for standard assembly specified by the appropriate highway authority. In the event the specified system assembly, maintenance, or repair would require a deviation from standard assembly parameters, contact a Ingal Civil Products representative. This system has been deemed eligible by the FHWA for use on the national highway system under strict criteria utilized by that agency.

This manual must be available to the worker overseeing and/or assembling the product at all times. For additional copies, contact Ingal Civil Products on 1300 446 425

The information contained in this manual supersede all previous versions. The instructions, illustrations, and specifications are based on the latest QuadGuard® M10 information available to Trinity Highway at publication. We reserve the right to make changes at any time. Please visit ingalcivil.com.au/products/road-safety-barriers/crash-cushions/quadguard-m10-mash to confirm the latest revision.

Table of Contents

Customer Service Contacts	3
Contact Introduction Notes	3
Safety Symbols	
Safety Rules for Use of	
Lifting and Working	5
System Overview	
Select Sh	
System Components	
Determine Transit Time	11
Recommended Tools	12
Site Preparation Fundamentals	1
Fundamentals of	15
Transit Height and Recommended Adhesive	1
Vertical	1
Characteristics and Cautions	1
Horizontal	18
System Use of	21
Guard M10 10 2 Final Select	3
Maintenance and Repair	35
Select Frequency	35
Sual Drive Select	35
Wall Select Check List	35
List of Structures	3
Parts Order Procedure	38
Parts Lists and Quantities	38
Guard M10 10 Tees Strut	0
TS Concrete Pad	1
TS Concrete Pad 800 Repair	2
Tees Strut	3
Miscellaneous	
Dihra	5
Sh	
Feeder	
Nose	8
Safety Shade Carrier Transit	9
Single Slope Transit	50
Vertical Carrier Transit	51
Vertical Carrier Transit Extended	52

Customer Service Contacts

Ingal Civil Products is committed to the highest level of customer service. Feedback regarding the QuadGuard® M10, its assembly procedures, supporting documentation, and performance is always welcome. Additional information can be obtained from the contact information below:

Ingal Civil Products

Telephone	1300 446 425
Contact Link	ingalcivil.com.au/contact-us

Important Introductory Notes

Proper assembly of the QuadGuard® M10 is critical to achieve tested performance that has been evaluated and deemed eligible by the FHWA per AASHTO MASH criteria. These instructions should be read and understood in their entirety before assembly. These instructions are for standard assemblies and used in conjunction with the assembly of the QuadGuard® M10 as specified by the applicable highway authority. If you need additional information, or have questions about the QuadGuard® M10, please contact the highway authority that has planned and specified this assembly and, if needed, contact Ingal Civil Products. This product must be assembled in the location specified by the appropriate project engineers. If there are deviations, alterations, or departures from the assembly protocol specified in this manual, the device may not perform as tested.



Important: DO NOT use any component part that has not been specifically specified herein for the QuadGuard® M10 during the assembly or repair of this system (p. 7 – 10 / 38 - 39).

A manufacturer's drawing package will be supplied by Ingal Civil Products upon request. Each system will be supplied with a specific drawing package unique to that system. Such drawings take precedence over information in this manual and shall be studied thoroughly by a qualified individual who is skilled in interpreting them before the start of any product assembly.

Safety Symbols

This section describes the safety symbols that appear in this manual. Read the manual for complete safety and assembly information.

Symbol

Meaning



Safety Alert Symbol: Indicates Important, Caution, Warning, or Danger. Failure to read and follow the Important, Caution, Warning, or Danger indicators could result in serious injury or death to workers and/or bystanders.



Warning: Read safety instructions thoroughly and follow the assembly directions and suggested safe practices before assembling, maintaining, or repairing the QuadGuard® M10. It is the responsibility of the installer to follow the instructions contained in this manual. Failure to comply with these warnings could result in increased risk of serious injury or death in the event of a vehicle impact.



Important: Please keep up-to-date instructions for later use and reference by anyone involved in the assembly of the product.

Safety Rules for Assembly

*** Important Safety Instructions ***

This manual must be kept in a location where it is readily available to persons who are skilled and experienced in the assembly, maintenance, or repair of the QuadGuard® M10. Additional copies of this manual are available from Ingal Civil Products on 1300 446 425 or by visiting ingalcivil.com.au/products/road-safety-barriers/crash-cushions/quadguard-m10-mash. Please contact Ingal Civil Products if you have any questions concerning the information in this manual or about the QuadGuard® M10.

It is the responsibility of the installer to use appropriate safety precautions when operating power equipment, mixing chemicals, and when moving heavy equipment or QuadGuard® M10 components. Safety articles including but not necessarily limited to work gloves, eye protection, safety-toe shoes, and back protection should be used.



Warning: It is the responsibility of the installer to use all safety measures incorporating appropriate traffic control devices specified by the highway authority. These measures must be used to protect all personnel while at the assembly, maintenance, or repair site.



Warning: Failure to comply with these warnings could result in increased risk of serious injury or death in the event of a vehicle impact with a system that has not been accepted by the FHWA.



Warning: Use only Trinity Highway parts on the QuadGuard® M10 for assembly, maintenance, or repair. The use of component parts not specified herein is **strictly prohibited**. The QuadGuard® M10 assembled with Trinity Highway parts has been tested, approved, and accepted for use by the FHWA. A QuadGuard® M10 using parts other than those specified herein has not been tested, approved, or accepted for use by the FHWA. Failure to follow this warning could result in increased risk of serious injury or death in the event of a vehicle impact.

Limitations and Warnings

Pursuant to MASH Recommended Procedures for the Safety Performance Evaluation of Highway Safety Features, Trimble Highway contracts with FHWA approved test facilities to perform and evaluate crash tests to prepare a crash test results report. Trimble Highway is the sole provider of a Request for Federal Aid Reimbursement of Safety Hardware Devices to the FHWA for reimbursement.

The QuadGuard® M10 system has been deemed eligible by FHWA as meeting the requirements and guidelines of MASH. These tests evaluate product performance defined by AASHTO involving lightweight cars (approx. 1100 kg [2420 lb.]) and full size pickup trucks (approx. 2270 kg [5000 lb.]). A product can be certified for multiple Test Levels. The QuadGuard® M10 is certified to the Test Level(s) as shown below:

Test Level 3: 100 kph

Test Level 2: 70 kph

These AASHTO directed tests are not intended to represent the performance of systems when impacted by every vehicle type or every impact condition existing on the roadway. This system is tested only to the test matrix criteria of MASH as approved by FHWA.

Trimble Highway expressly disclaims any liability for injury or damage to persons or property resulting from any impact collision or harmful contact with products, other vehicles, or clear hazards or objects on any vehicle, object or person, whether or not the products were assembled in consultation with Trimble Highway or third parties.

The QuadGuard® M10 is intended to be assembled, delivered, and maintained in the specified state and federal guidelines. It is important for the project engineer select the use of a highway product to select the best appropriate product configuration for site specifications. The customer should be careful to properly select, assemble and maintain the product. Careful evaluation of site layout, traffic speed, and road conditions are some of the elements that require evaluation of the project engineer in the selection of a highway product. For example, curves could cause an unintended effect on any impact vehicle.

After an impact occurs, the debris from the impact should be removed from the area immediately and the selected highway product should be evaluated and restored to its original secured condition or replaced as the project engineer determines as soon as possible.



Warning: Do not assemble, maintain or repair the QuadGuard® M10 until you have read this manual thoroughly and completely understood it.



Warning: Ensure that all Danger/Warning/Cautions and important state alerts in this manual are completely understood. Failure to follow this warning could result in serious injury or death in the event of a collision.

System Overview

The Quadguard M10 is a redirectable impact crash cushion for roadside features up to 2000mm high and greater width with use of a standard traffic cone. It consists of a series of 10 cartridges surrounded by a frame of Quadguard Feeder rails.



Important: Trinity Highway makes no recommendation whether use or reuse of any part of the system is appropriate or acceptable following an impact. It is the sole responsibility of the project engineer to make that determination. It is critical that you inspect this product after assembly is complete to make certain that the instructions provided in this manual have been strictly followed.

The Quadguard M10 utilizes 10 cartridges in a standard configuration that are designed and tested to address vehicles as defined in MASH for both lighter cars and heavier heavy centerline vehicles.

Impact Performance

The six 1000mm Quadguard M10 has successfully passed the requirements stipulated in MASH with both the light car and medium trucks at speeds up to 100 km/h at 2 degree redirect angles up to 25 degrees.

The three 3000mm Quadguard M10 has successfully passed the requirements stipulated in MASH with both the light car and medium trucks at speeds up to 100 km/h at 2 degree redirect angles up to 25 degrees.

During head-on impact test with MASH criteria the Quadguard M10 has been shown to telescope rearward to absorb the energy of the impact. When impacted from the side with the appropriate MASH criteria it has been shown to redirect the vehicle back toward its original travel path and absorb the high energy feature.



Warning: It is the sole responsibility of the project engineer to ensure that the Quadguard M10 and deflection used meet all federal, state, and local specifications.



Warning: It is the sole responsibility of the project engineer to ensure that the Quadguard M10 meets all appropriate Manual and/or Traffic Control Devices, MUTCD and local standards.

Inspect Shipping

Check the received parts against the shipping list supplied with the system before deconstructing the Quadguard M10. Make sure all parts have been received in 38-39.



Important: The Manufacturer's Drawings package supplied with the Quadguard M10 must be used with these instructions for proper assembly and should take precedence over these general instructions.

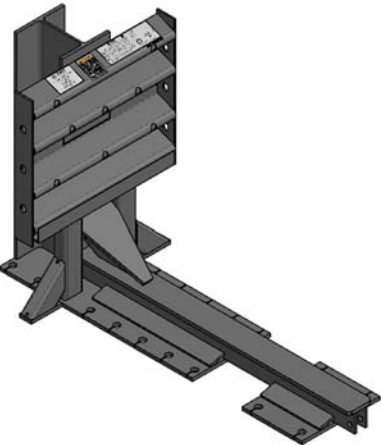
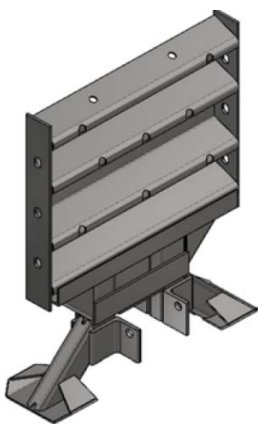
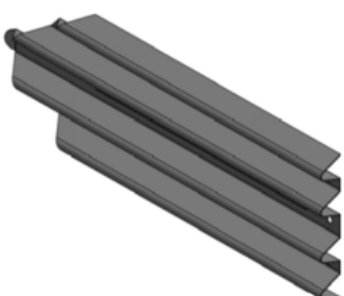


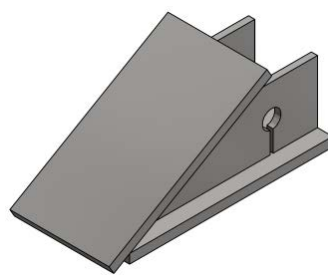






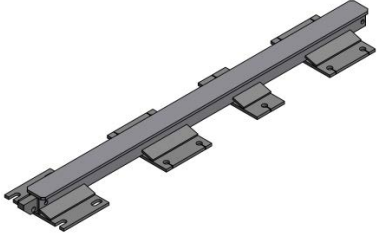
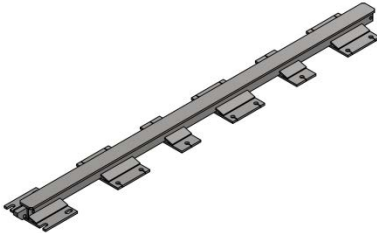
Warning: Do NOT add the Quadguard M10 to a road.

System Components

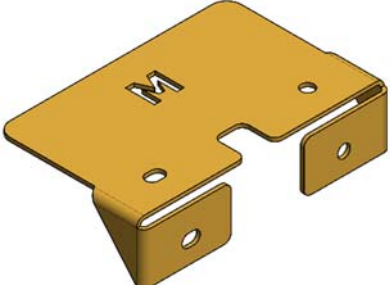
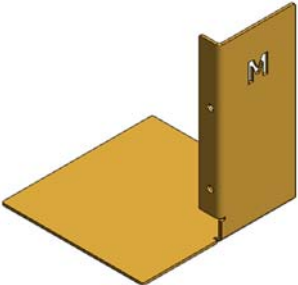
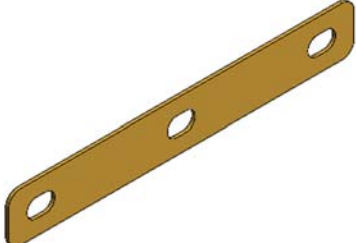
Below is a list of system components that can be used in our Carticular Quadward M10 configurations. Our parts delivered and system details with the M10 and Materials and system drawings should with our system. Please call local Contacts if you have a system. Questions 333

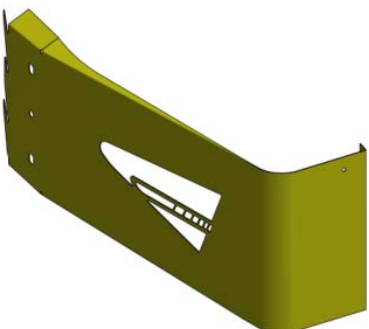
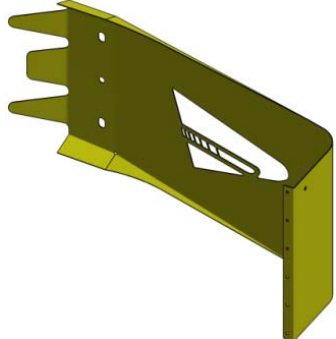
Note: Components are not shown to scale

<p>Telescopic Strut Pack 200</p>  <p>1010230</p>	<p>Dia. 200</p>  <p>10102113</p>	<p>Panel Feeder</p>  <p>10102002</p>
<p>Panel Side</p>  <p>1010200</p>	<p>Bracket Cartridge Support</p>  <p>10102000</p>	<p>End Cap Material</p>  <p>10102313</p>
<p>Bracket Cartridge Support TS</p>  <p>1010200</p>	<p>Locating Bar Cartridge Support</p>  <p>10102019</p>	<p>303 Sch 80X3</p>  <p>253</p>



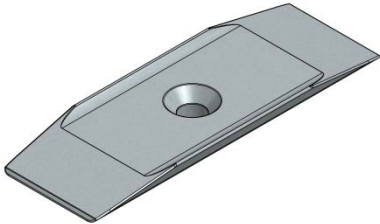


M ₀₀₀ ra ₁ ude	M ₀₀₀ ra ₁ T ₀₀ as ₀₀₀₀	M ₀₀₀ ra ₁ Three ₀ as ₀₀₀₀
		
1010253	10102311	10102312

Sh ₀₀ 12 ₀₀ X3.5 ₀ 8X8	rac ₀ et ₀₀₀₀ le ₀ 2X1 ₀ W ₀ H ₀ les	rac ₀ et ₀₀₀₀ ull ₀₀ ut
		
1010290	10102213	10102011

rac ₀ et ₀₀ Cart ₀ H ₀ ld ₀₀₀₀	rac ₀ et ₀₀ Cart ₀ Su ₀₀₀₀ rt ₀ N ₀ se	W ₀ SH ₀ R ₀₀₀₀ 10 ₀₀ X2X1 ₀ SL ₀ T
		
10102211	10102212	10102210

N ₀ se ₀ L ₀ W ₀ L ₀₀₀₀	N ₀ se ₀ R ₀ W ₀ L ₀₀₀₀
	
10102202	1010220

<p>Hex 1 X3 5</p>  <p>10102508</p>	<p>Hex 3.8 X1 5</p>  <p>1010312</p>	<p>Hex 5.8 X3 12 5</p>  <p>10102552</p>
<p>Ra Hex 5.8 X2</p>  <p>10102503</p>	<p>Hex Ra 5.8 11 X5</p>  <p>001</p>	<p>Hex 3 X2 8</p>  <p>101022</p>
<p>ch M20 x 1 5 r 8.8</p>  <p>1010259</p>	<p>ch M20 x 180 r 8.8</p>  <p>101025</p>	<p>ch M20 x 0 r 8.8</p>  <p>10102911</p>
<p>Nut Hex 1</p>  <p>10102515</p>	<p>Nut Hex 3.8</p>  <p>1010251</p>	<p>Ra Nut Hex 5.8</p>  <p>10102501</p>
<p>Nut Hex 5.8</p>  <p>10102502</p>	<p>Nut Hex 3</p>  <p>1010250</p>	<p>M20 Structural Nut Hex al</p>  <p>10102539</p>

Washer□L□c□5/8  10102530	Washer□L□c□3/8  10102528	Washer□Flat 3/8X1  1010252□
Washer□Flat□5/8X1 3/8  10102500	Washer□Fe□der□3/8X2  118038	Washer□Flat□3/8X2  101025□□
Mushr□□□ Washer  1010253□	Flat Scre□ 5/8X5□□ 8  10102520	De S□□□□ 5/8 X 1 1/2  10102523
Cartrd□e □ss□□T□e □  10102903	Cartrd□e □ss□□T□e □□  1010290□	□□□red □dhes□e  10102902

[illegible]

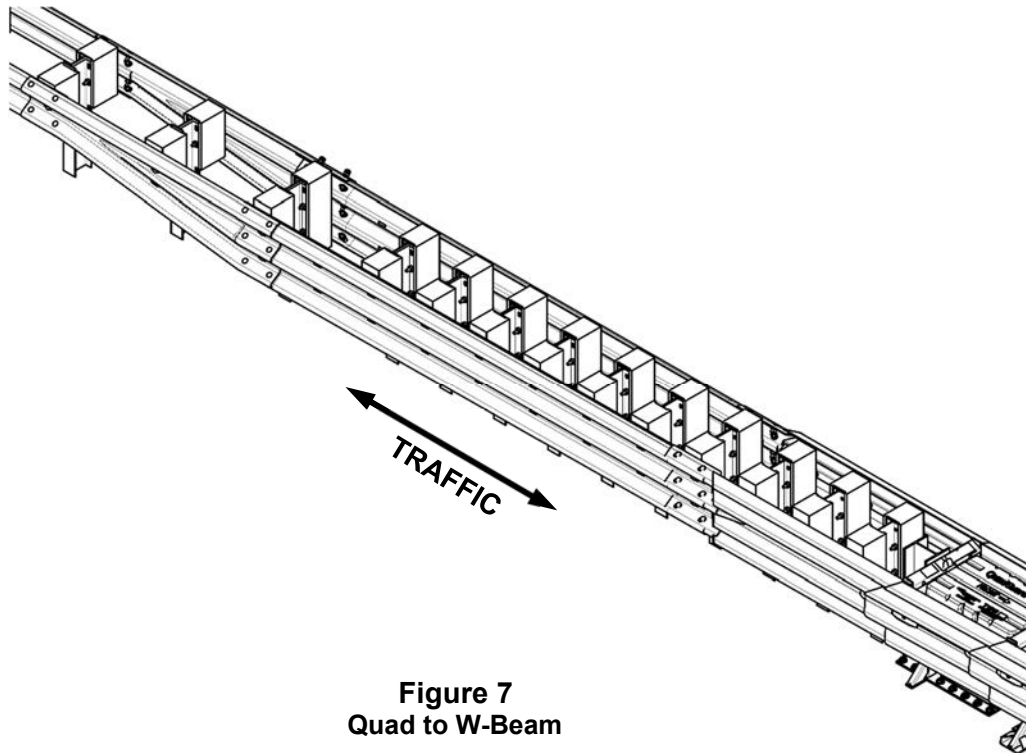


Figure 7
Quad to W-Beam

Recommended Tools

Documentation

- Manufacturer's Installation Manual
- Manufacturer's Drawings Package

Personal Protective equipment

- Eye Protection
- Gloves
- Safety Toe Shoes
- Protective Clothing
- Reflective Vest

Cutting equipment

- Rotary Hammer Drill
- Recar cutting bit
- Concrete drill bits 22 mm (Double-Fluted)
- Grinder/Hacksaw or Torch optional



Important: Traffic Hazard! Always use **double-fluted** drill bits to achieve optimum tensile strength when applying an approved adhesive anchoring system 15mm

Hammers

- Sledgehammer
- Standard hammer

Wrenches

- Headcut 1/2" drive impact wrench
- 1/2" drive sockets 9", 15", 18", 21"
- 1/2" drive Deep well sockets 15", 18"
- 1/2" drive Ratchet and attachments
- 1/2" drive breaker bar 2'
- 1/2" drive Torque wrench 200 ft-lb
- Combination wrenches 9", 15", 18"
- Hex key Allen wrench 3/8"



Important: Trinity Highway makes no recommendation whether use or reuse of any part of the system is appropriate or acceptable following an impact. It is the sole responsibility of the project engineer to make that determination. It is critical that you inspect this product after assembly is complete to make certain that the instructions provided in this manual have been strictly followed.

Miscellaneous

- Traffic control equipment
- Lift and storage equipment or lifting device is preferred although a hydraulic crane used. Minimum 5000 lbs capacity required.
- Air Compressor 100 cfm min and generator 5 kW
- Load crane
- Drift pin 300 lb
- Center punch
- Tape measure 5' 25'
- Chalkline
- Concrete marking pencil
- Steel bristled tube brush for cleaning 22mm drilled boreholes
- Rags, water, and solvent for touch-up

Note: The provided list of tools is a general recommendation and should not be considered an extensive list. Depending on specific site conditions and the complexity of the assembly, the required tools may vary. Decisions as to what tools are needed to perform the job are entirely the responsibility of the selected contractor performing the assembly of the system at the specified assembly site.

quadward M10 error alert attached should be assessed as existing or resolved and cured concrete case 28 Mpa 1000 samples used for testing and retesting the concrete case and attribute must call forth correct class or otherwise determined the local health authority

Records deleted from the database and resource file specifications for the created databases are recorded in the Transaction History database drawn up by the system. The system also assembled a reinforced concrete roadway in 2008 with the Department's cross-section shall not exceed 8 m and should not be more than 2 m over the length of the system, the database surface shall have a light gray finish.

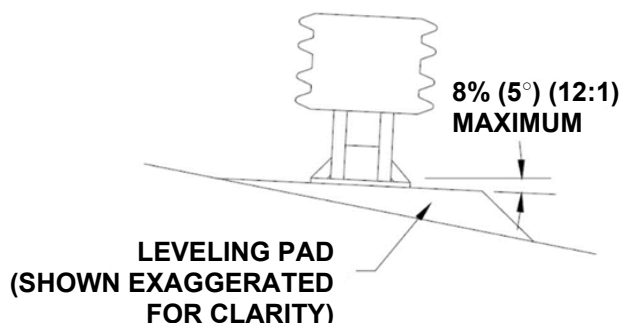
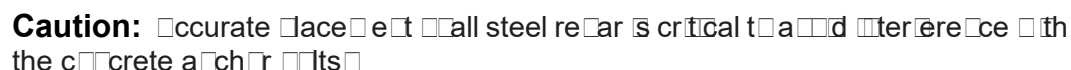
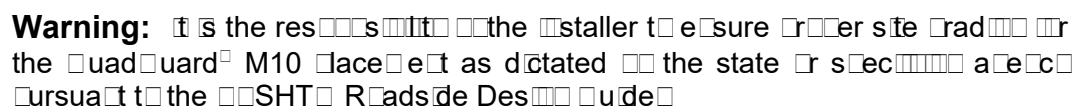
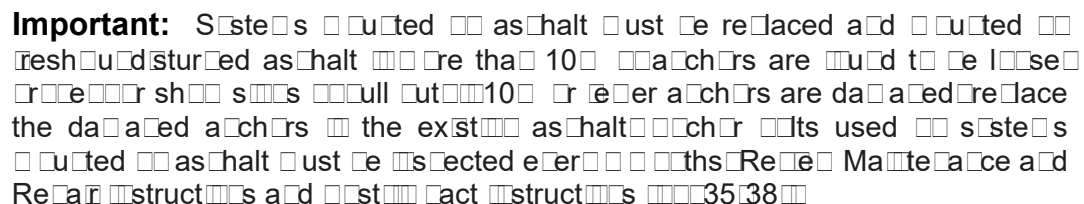
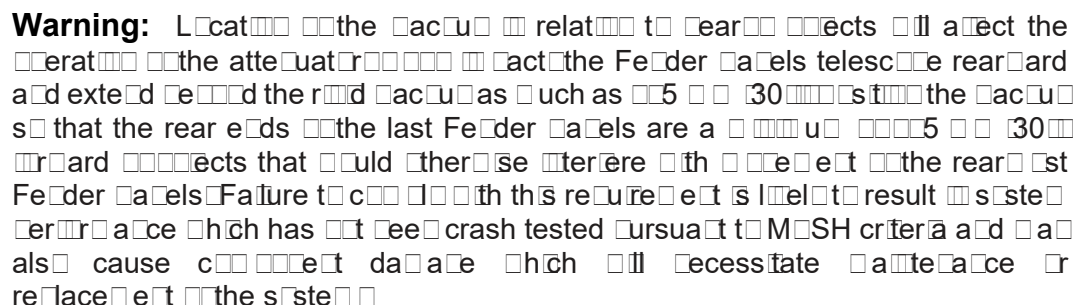


Figure 8 Cross-Slope



Foundation/Anchoring



Important: It is the responsibility of the local DOT to ensure that this asset complies to the SHT Roadside Design Guide.



Warning: It is the responsibility of the installer to ensure that our asset is procedure meets all appropriate Safe Work Australia WorkSafe New South Wales state or territory authorities standards.

Asphalt Installations

Systems with a Tension Strut located on a tie to be installed in construction areas on asphalt surfaces of **Asphalt Concrete ("A.C.")** must provide a minimum of 3 layers of asphalt over a minimum of 3 layers of **Portland Cement Concrete ("P.C.C.")** 152 mm layer of asphalt over 152 mm layer of subbase or 200 mm 8 layer of asphalt with subbase.



Important: 100 mm 18 threaded rods with Treated Hardwood approved adhesive can be used with asphalt subbases and 15 Contact Treated Hardwood or a complete list of approved adhesives and 3.

Concrete Installations

For concrete installations the Quad Guard M10 should be installed on an existing or freshly placed and cured concrete base 1000 sqm 28 Mpa minimum or retest of the concrete base and the attachment must comply with the project plans or as otherwise determined by the resident project engineer.

Recommended dimensions and reinforcement specifications for the concrete pads can be found on the standard drawings.

The Quad Guard M10 can be installed on any of the following subbases using the specified anchorage.

Foundation A: Reinforced Concrete Pad or Roadway

Foundation 152 mm minimum thickness depth 100 mm

Anchorage approved adhesive with 180 mm studs 100 mm 5 12 mm embedded

Foundation B: Asphalt over P.C.C.

Foundation 3 mm minimum asphalt concrete 100 mm 3 mm minimum 100 mm

Anchorage Length anchorage required is 100 mm 18 mm embedded 20 mm 1 12 mm

Foundation C: Asphalt over Subbase

Foundation 152 mm minimum thickness 152 mm minimum thickness 100 mm 100 mm

Anchorage approved adhesive with 100 mm 18 mm studs 20 mm 1 12 mm embedded

Foundation D: Asphalt Only

Foundation 200 mm 8 mm minimum thickness 100 mm

Anchorage approved adhesive with 100 mm 18 mm studs 20 mm 1 12 mm embedded

Trinity Highway Approved Adhesive Anchoring System

Trinity Highway approved adhesive anchoring system is required to securely anchor crash cushions to each approved adhesive manufacturer's studs, nuts and washers both vertical and horizontal assemblies are possible using a Trinity Highway approved adhesive anchoring system

Vertical Anchors

Note: Read all Trinity Highway approved adhesive instructions before starting.

1 Prepare the Concrete Foundation



Warning: Do not allow any anchoring adhesive to contact skin or eyes. See Material Safety Data Sheet supplied with adhesive for first aid procedures. Use only in well-ventilated area. Do not use near open flame.



Warning: It is the responsibility of the installer to maintain a safe work area including the use of standard personal protective equipment (PPE) and proper dress. Safety glasses and eye wear protect eyes.

The anchor bolts studs that anchor the QuadGuard M10 MacQuay and M10 MacQuay sections to the concrete must be those shown in the first column strength steel 20000 psi 830 MacQuay minimum tensile strength or equal. These studs must be set in a minimum 1000 psi 28 MacQuay concrete. Allow the concrete to cure a minimum of seven days before applying anchoring adhesive.

2) Drill Boreholes



Caution: It is the responsibility of the installer to consult Safe Work Australia, WorkSafe NZ, or state & territory authorities for debris removal from borehole(s) and use Trinity Highway approved adhesive to achieve optimum tensile strength. Do not use diamond drill bits for drilling boreholes.

Use the MacQuay and Tensar Strut MacQuay as drill templates. Use a rotary hammer drill to drill the boreholes 22 mm 8mm diameter to the recommended depth. See the approved adhesive instructions provided with adhesive for details. Check to ensure each borehole is drilled to the proper depth and aligned with the part to be anchored per anchoring instructions.

Anchoring Information					
Stud Size:	Orientation	Bit Size	Minimum Depth	Torque	Medium
M20 x 180mm	Vertical	22 mm 8mm	150 mm	Manufacturer Spec	Concrete
M20 x 100mm	Vertical	22 mm 8mm	25 mm	10 Nm 15 Nm	Asphalt



Important: When mounting on asphalt, initial torque shall be as shown above. Due to the properties of asphalt, anchors may loosen over time. For this reason Trinity Highway recommends anchoring to asphalt only at temporary locations. It is recommended to re-torque anchors in asphalt every six (6) months to the proper initial torque specified.

3) Clean the Boreholes

Remove the concrete dust from the borehole using a free compressed air. Thoroughly flush with a 22mm diameter steel bristle tube flush and the dust out. Then the borehole is set back to flush with water while flushing and the dust is cleaned. Remove all water using a free compressed air.

Note: Use the Triton High Pressure Vacuum drill equipment is authorized to replace the equipment and flush requirements of Step 3.

4) Apply Approved Adhesive

Fill the borehole 100% full.



Caution: Fill borehole 100% full so it is even with the concrete surface per manufacturer's instructions.

5) Add the Washers and Nuts

Place a flat washer on the stud then thread a nut until the end of the stud is flush with the nut. (Figure 9)

6) Insert Studs in Boreholes and Wait for Adhesive to Cure

Push the stud down through the part to be anchored and into the borehole.



Caution: Do not disturb or load the stud until the approved adhesive material has fully cured. Reference instructions supplied with the approved adhesive.

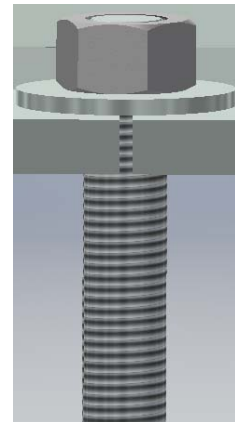


Figure 9
Vertical Application
(Before Applied Torque)

7) Torque the Nuts

Once the adhesive has fully cured torque the nut to the adhesive per manufacturer's recommended values.

Anchor Assembly Cautions

1) Steel rebar

Steel rebar is encountered while drilling a anchor bolt borehole. Do not use the following solutions.

Do not use a rebar drill bit for the **rebar only** and the switch back to the concrete bit to finish drilling into the underlying concrete until the proper borehole depth is reached.



Caution: Do not drill through rebar without first contacting person to do so from the project engineer.

Drill a test borehole down at a angle. Cast the rebar to the proper depth. Check the stud can be set in all the boreholes with approved adhesive.

Horizontal Anchors

The horizontal anchored adhesive fit is the same as the vertical fit



Caution: Fill borehole 100% full so it is even with the vertical concrete surface per manufacturer's instructions

1) Follow the instructions supplied with your approved adhesive kit

Apply approved adhesive to each anchor per instructions

2) Add the Washers and Nuts

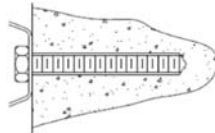
Put washer and put stud so the nut is flush with end of stud

3) Insert each Stud with Washer and Nut into Borehole

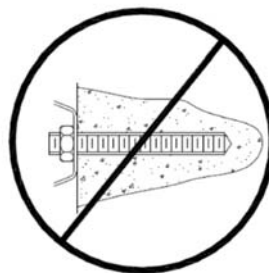
Push stud with washer and nut into borehole



Important: The stud should be flush with the top of the nut in both vertical and horizontal applications or to tolerance Figure 10



CORRECT



INCORRECT

Figure 10
Horizontal Application
(Before Applied Torque)



Caution: Do not disturb or load the stud until the approved adhesive material has hardened. Reference approved adhesive fit instructions for hardened times.

4) Torque the nuts

Once the adhesive has fully cured, torque out to the approved adhesive manufacturer's specification

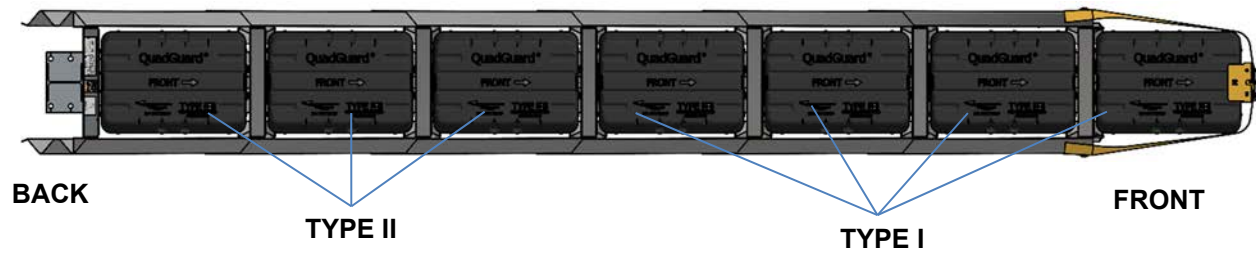


Figure 11 Plan View

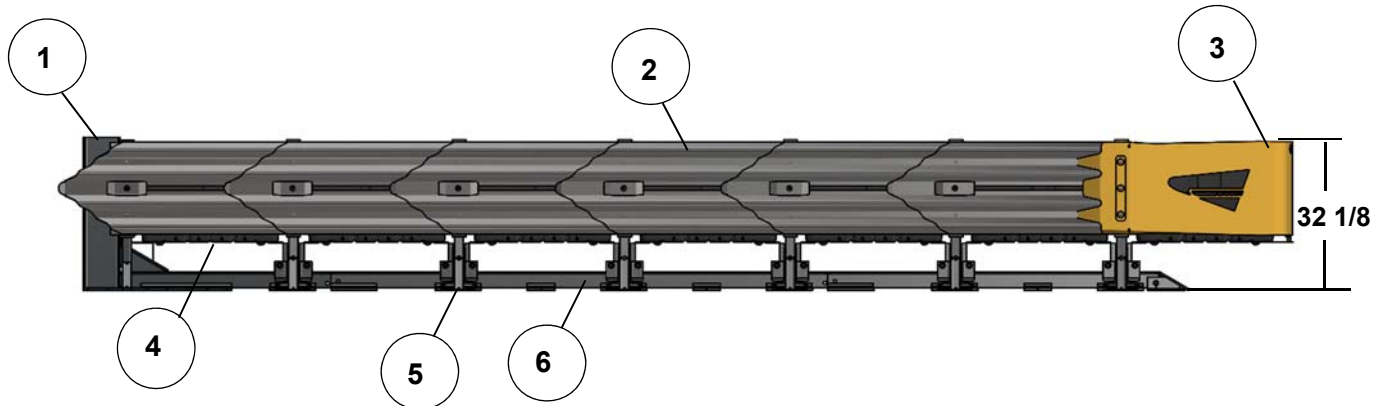
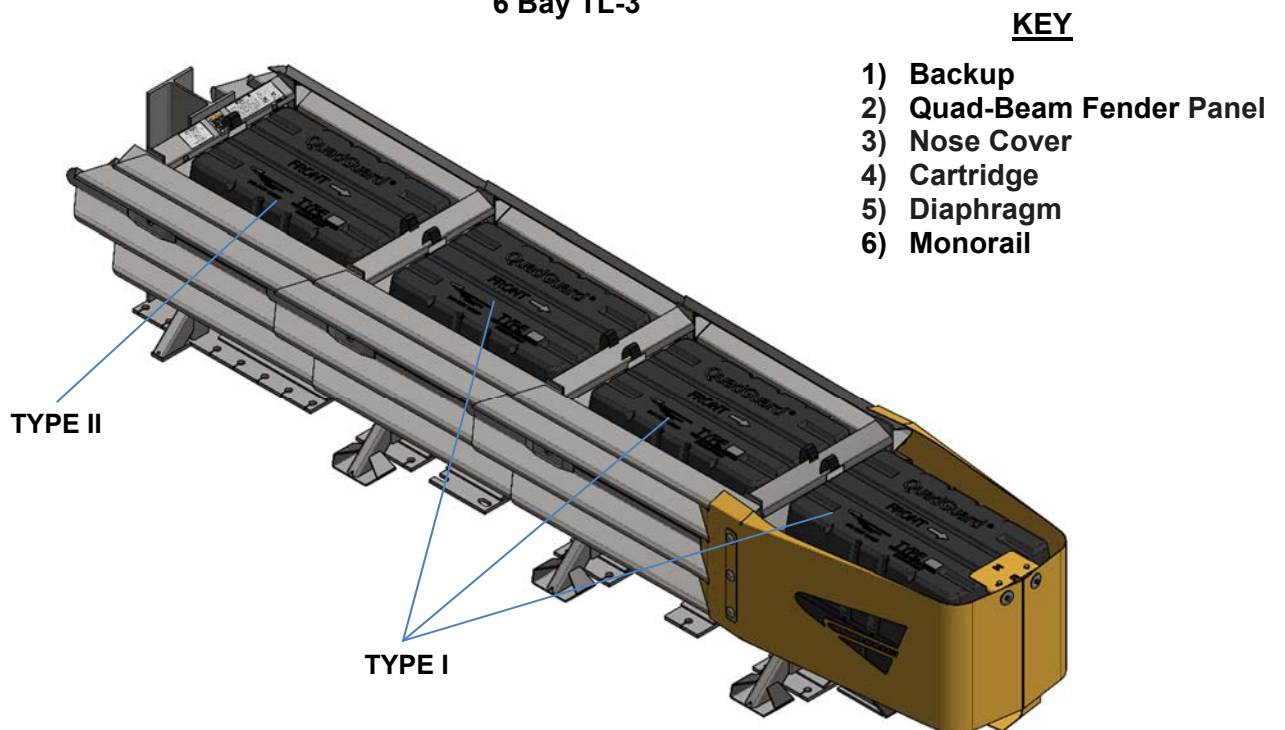


Figure 12 Elevation View
6 Bay TL-3



KEY

- 1) Backup
- 2) Quad-Beam Fender Panel
- 3) Nose Cover
- 4) Cartridge
- 5) Diaphragm
- 6) Monorail

Figure 13
3 Bay TL-2

How to Determine Left/Right

To determine the left/right orientation of the carts stand in front of the system facing the roadside of the stack. Our left is the system is left and our right is the system is right.

Counting the Number of Bays

The stack consists of the Cartridge Diaphragm and two Feeder panels. The Nose section is not considered a bay although there is a Cartridge in the Nose of each system.

Note: There will always be one more Cartridge in the system than the number of bays in the system. To determine the number of bays count Feeder panels on one side (Figure 14).

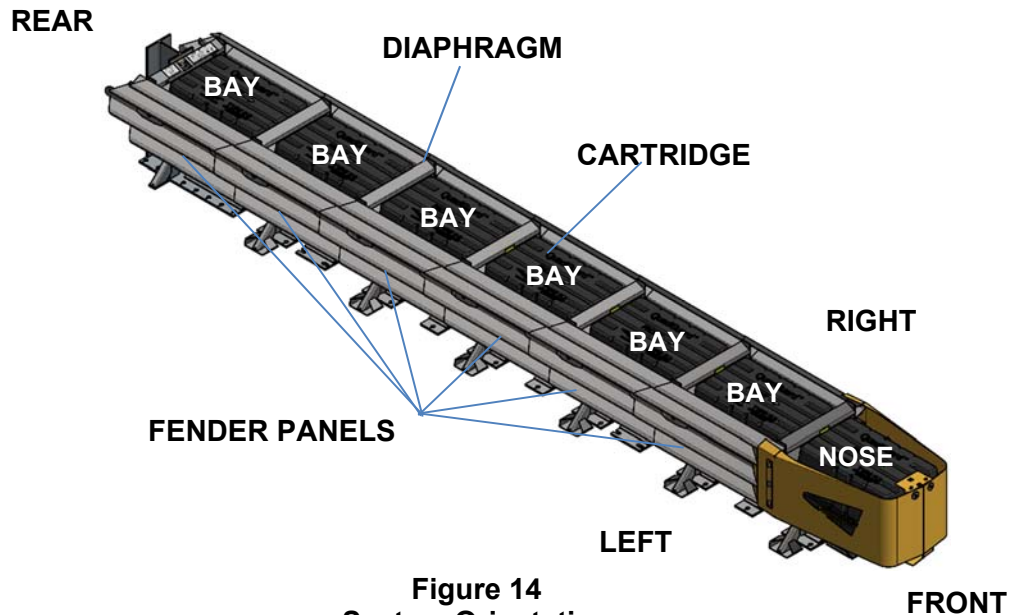


Figure 14
System Orientation

Measuring the Width

The total width of the 10 or 20 parallel system is the width of the diaphragm (Figure 15).

The outside width of the system is approximately 152 inches wider than the total width.

Note: The outside width of the system is not the same as the width of the vacuum.

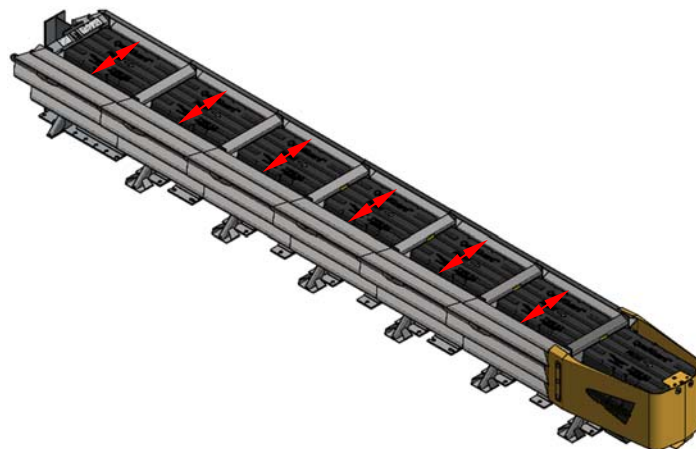


Figure 15
Width of Parallel system

System Assembly



Warning: If the QuadGuard system has been supplied pre-assembled, it will have transport bolts with warning tags installed in the monorail. These monorail bolts are used to hold the system together while in transit and therefore are for transportation purposes only. They **MUST** be removed during installation of the QuadGuard system. It is solely the responsibility of the installer to ensure any transport bolts are completely removed. Failure to remove can affect the systems performance and may result in personal injury or death.



Warning: It is the responsibility of the installer to ensure the assembly procedure meets all appropriate Safe Work Australia, WorkSafe NZ, or state & territory authorities standards.

1) Mark System Location

Locate the centerline of the system by measuring the proper offset from the fixed object. Refer to the Drawing Package supplied with the system. Place chalk line to mark the centerline of the system. Mark a construction line parallel to the center line and offset 165 mm [6.5"] to one side as shown in Figure 16. The edge of the Monorail will be positioned on this line.

Note: The concrete foundation must comply with the Manufacturer's Drawing Package supplied with the system.



Warning: Location of system with respect to the roadside obstacle is critical and dependent on the type of Transition Panel used. Please refer to the Drawing Package supplied with the system for details.



Figure 16
(Top view of concrete foundation)

2) Anchor the Tension Strut Backup (Figure 17)

Locate Tension Strut Backup and Monorail on mudatim with side of Monorail on the constructim. **Verify that any applicable Transition Panels fit properly before anchoring Backup.** Drill 22 mm 8mm diameter 15 mm 3mm each of holes in mudatim using the Backup as template. Then the Backup to the concrete mudatim using a approved adhesive supplied with the Backup M10 1mm

Note: Per that a approved cable Transition Panels in order to be anchored Backup



Caution: Per hole in the Backup and Monorail must be anchored in a stud using a approved adhesive 1mm

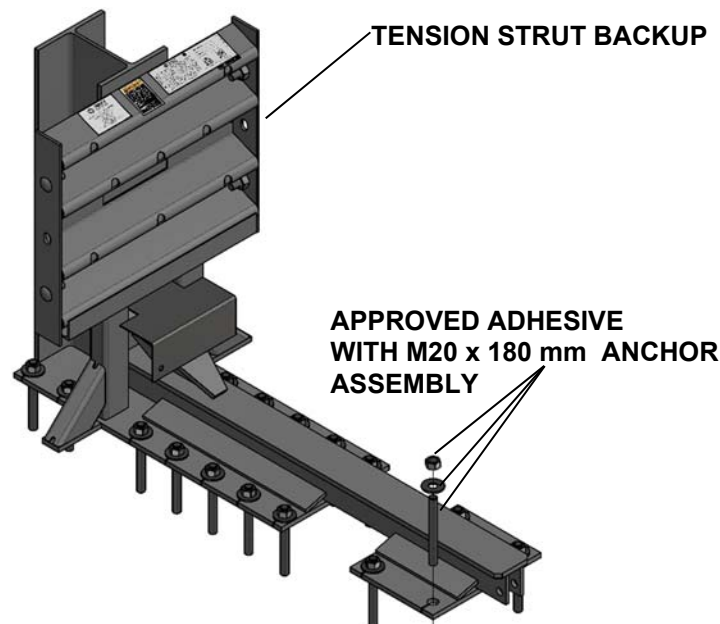


Figure 17
Anchoring Tension Strut
Backup to Foundation

3) Anchor the Monorail

Monorail Placement for Tension Strut Backup (Figure 21)

Locate Monorail on mudatim with side of Monorail on the constructim and rear edge of Backup 100 mm 8mm diameter 15 mm 3mm each of holes in mudatim

Per the Monorails that the Monorails face the Backup



Warning: Per all at the Monorails side must be a correct order system collapse during a fact 2mm Detail 19a

It is in contact to all each section of Monorail on the Backup to the foot of the system 1mm 8mm diameter each Monorail section using the Tru-High approved adhesive its 1mm

4) Attach Side Panels and/or Transition Panels to Backup Assembly

Attach Transition Panel or Side Panel to side backup using 5/8" rail nut and 5/8" rail nut
plates that are attached holes. * See backup assembly drawings below.

Note: Do not use a Side Panel when a Transition Panel is used

Assembly Tip:

Use drift pin to align the center hole of the Side Panel with the center hole of the Backup before inserting the Rail Bolts

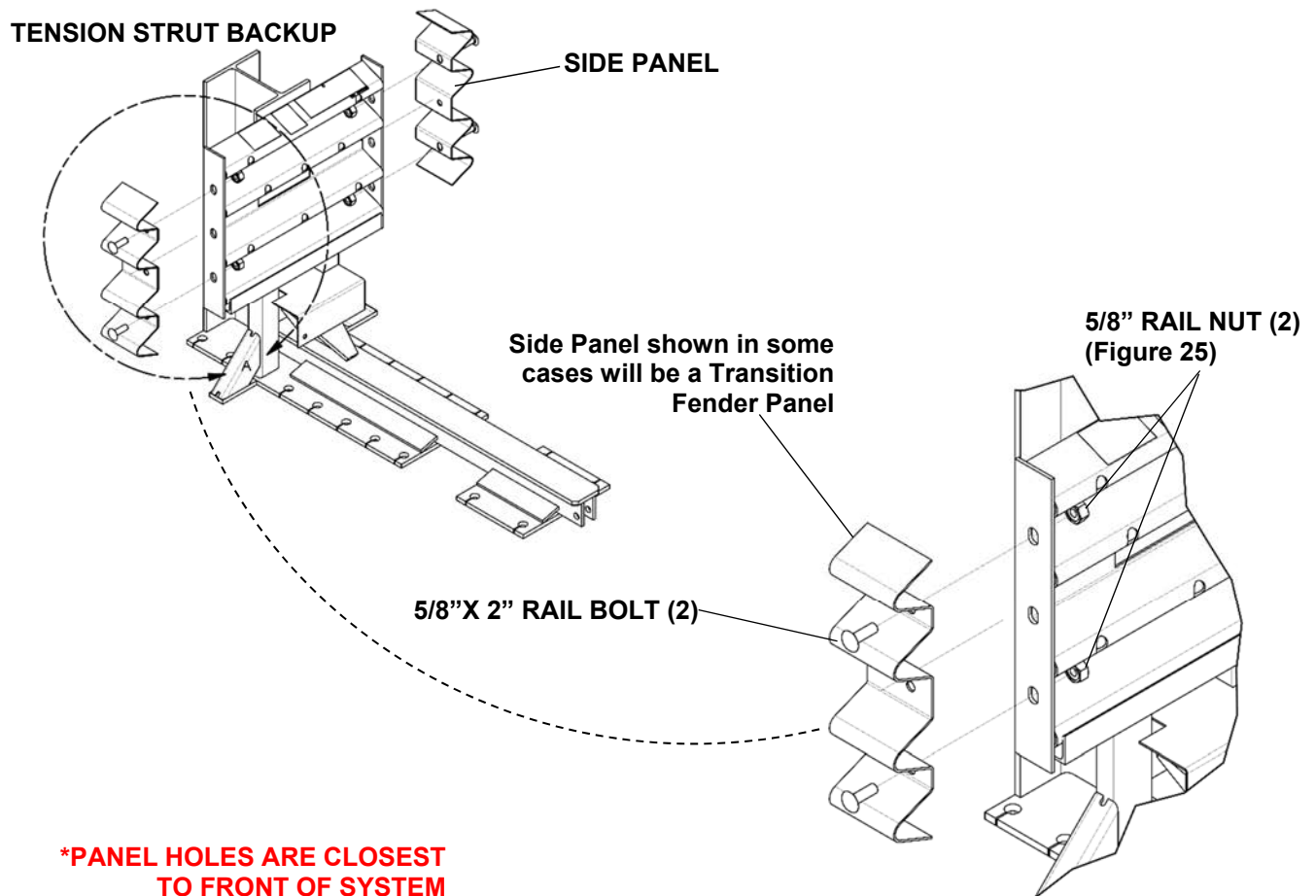


Figure 18
Side Panel/Transition Panel Attachment



Warning: Every hole in the Backup and Monorail must be anchored with a stud using a approved adhesive (1001)

Drill 22 mm Ø 8mm diameter 105 mm ± 3mm deep holes using the Monorail as a template. Do not drill through mudat.

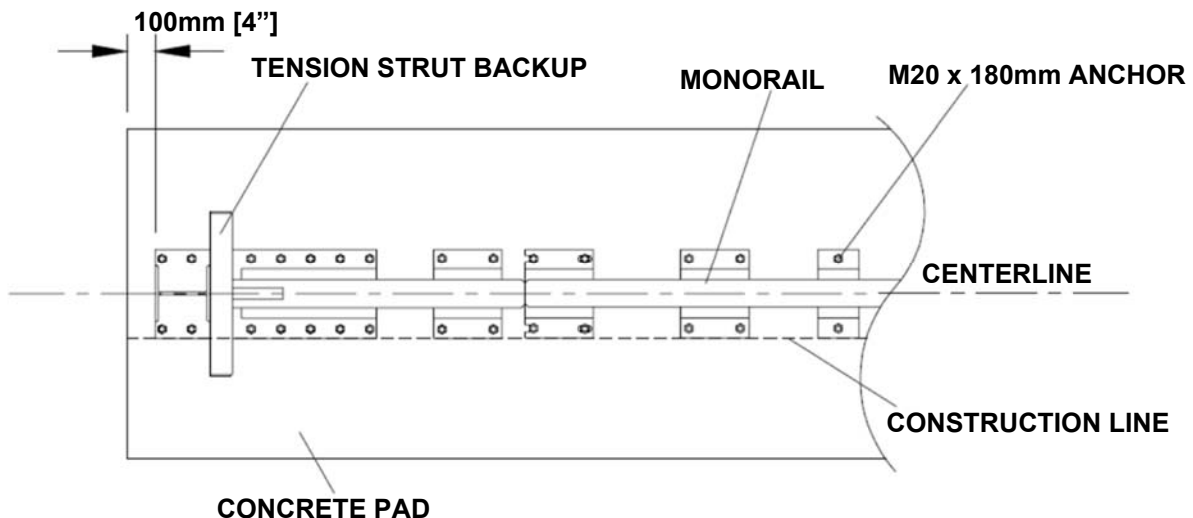
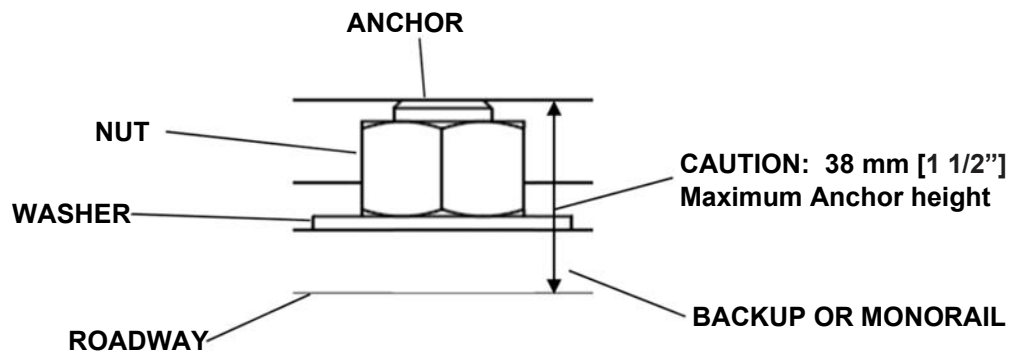
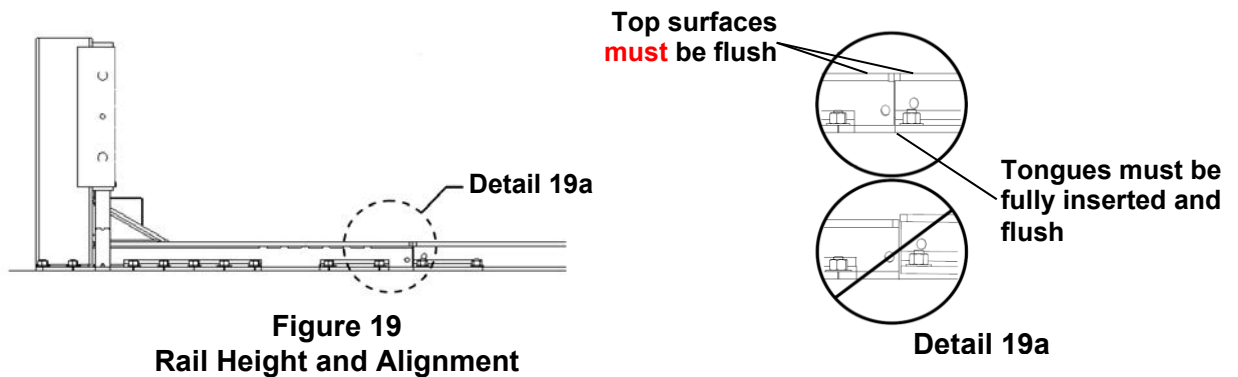


Figure 21
Backup and Monorail Location for Tension Strut Backup

5) Attach Monorail Guides

Attach Monorail Guides to Diaphragms as follows:

Insert 3mm x 2mm hex bolt through Monorail Guide and Diaphragm with a shim placed between them and oriented as shown in Figure 22. Secure with 3mm lock washer and 3mm hex nut in the same places. See the Diaphragm assembly drawings supplied with the system.

Repeat process for each Diaphragm.

6) Attach Diaphragms

Orient a Diaphragm so that the front face of the Diaphragm shall face towards the Nose of the system as shown in Figure 23.



Important: Slide the Diaphragm all the way to the back to ensure the system is able to collapse properly during impact.

Orient and slide all other Diaphragms to Monorail and position each approximately as shown in Figure 20.

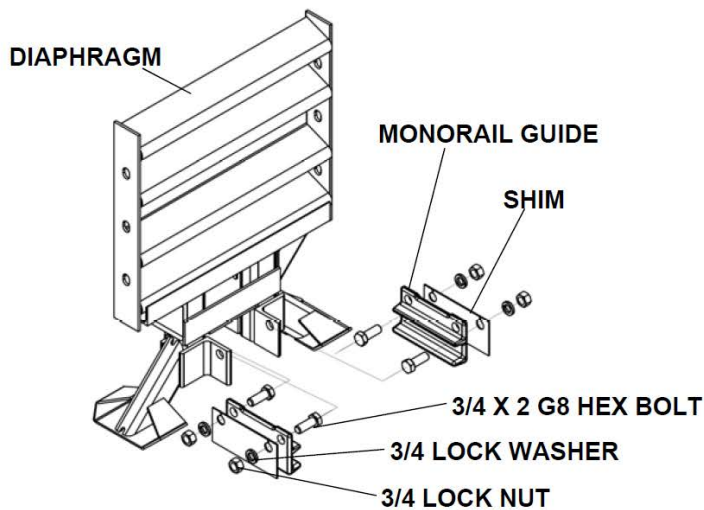


Figure 22
Monorail Guide Attachment

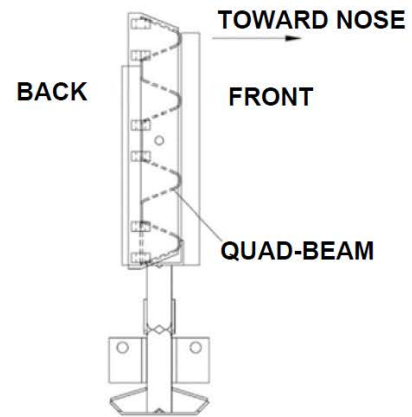


Figure 23
Diaphragm Orientation

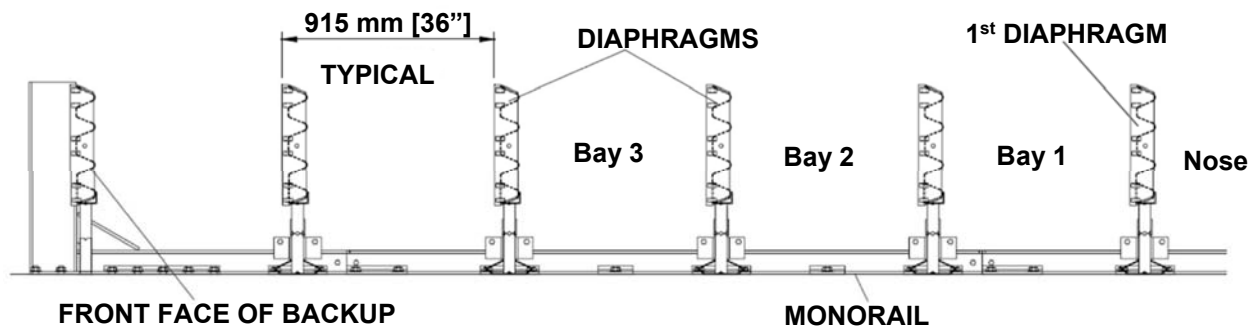


Figure 24
Diaphragm Spacing

7) Attach Fender Panels

Note: Do not mix the 5/8" rail nuts with the 5/8" hex nuts as all Figure 25

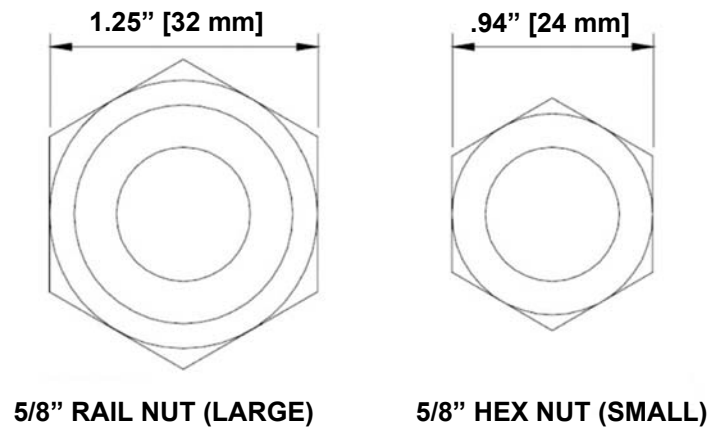


Figure 25
Rail Nuts are Oversize

Note: Start at the back attach left and right Fender panels shown below in Steps 1 and 5 with each tapered end pointing toward the rear of the system (p. 27).

Step 1

Place the Fender panel so that the center of the slot of the rearward Diaphragm is lined up with the approximate center of the slot in the Fender panel.

Attach Mushroom Washer as shown in Figure 2 Detail 2 and 2. Do not torque fasteners at this time. This Step 1 helps to balance the Fender panel.

Step 2

Slide the Fender panel forward until the holes in the Fender panel line up with the holes in the rear Diaphragm.

Step 3

Use a drift pin to align the center hole of the Fender panel with the center hole of the Diaphragm.

Note: Work from the back assemble and tighten each panel section one at a time toward the Nose of the system.

Step 4

Attach the front of the Fender Panels to the next Diaphragm using two 5/8" rail nuts and large hex nuts per side. Use the top and bottom holes and leave the center hole clear until the next Fender Panel is attached.

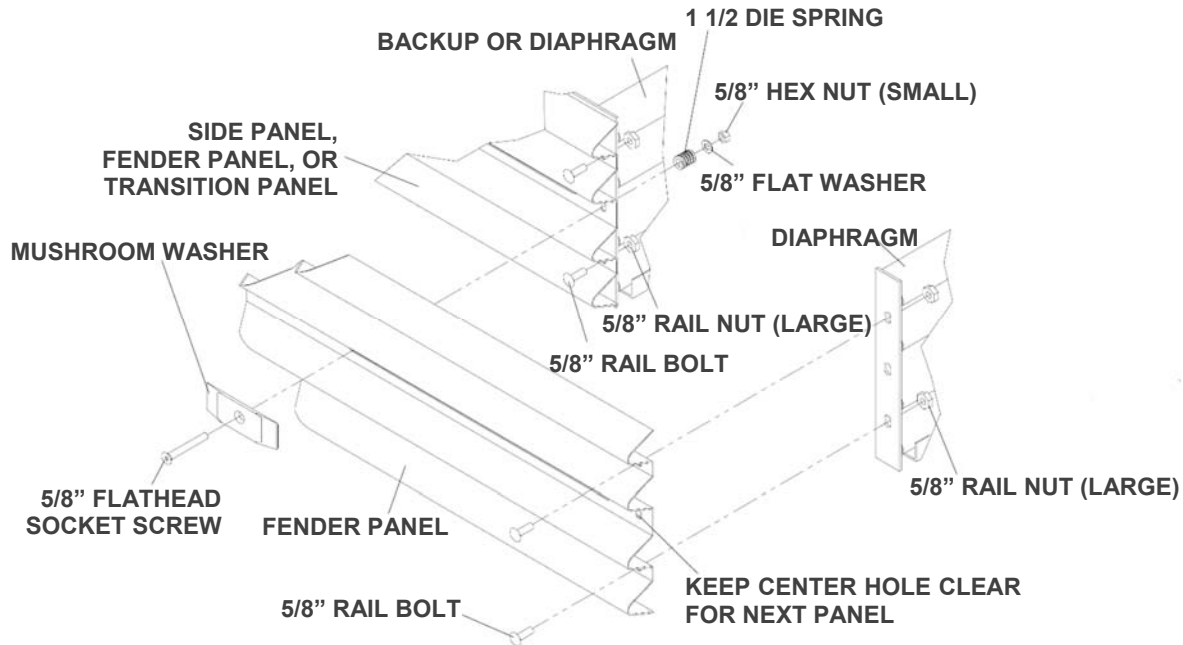
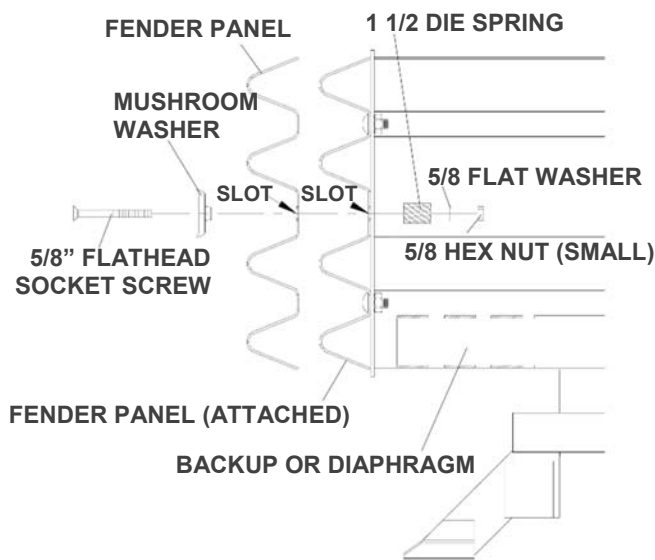


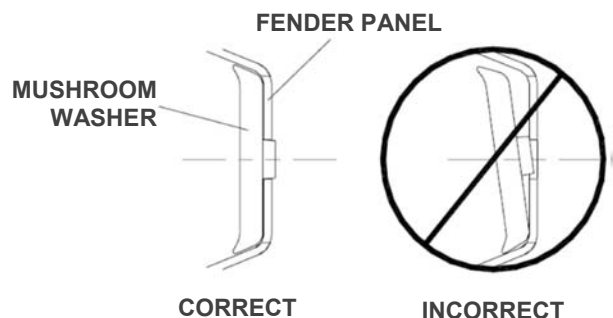
Figure 26
Fender Panel Assembly

Step 5

Be sure Mushroom Washer is flat against the Fender Panel as shown in Detail 2. Standard Mushroom Washer must be seated completely through slot.



Detail 26a
Mushroom Washer Attachment



Detail 26b
Mushroom Washer Orientation



Important: Start from the back and attach and tighten each bay section one at a time.

Step 6

Check Diaphragm spacing to ensure 915 mm (36 inches) between rear faces of consecutive Diaphragms as shown in Fender Panel assembly drawing in Figure 27.

Step 7

Once fender spacing has been achieved, tighten the Mushroom Washer assembly into all hex nut until it reaches the end of the threads.

Repeat the same procedure for all Diaphragms and Fender Panels in the same procedures.

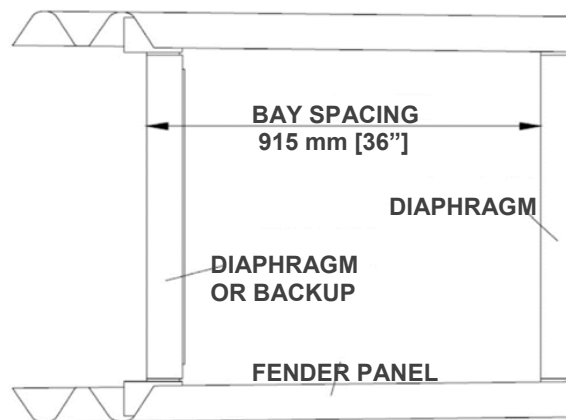


Figure 27
Proper Diaphragm Spacing

8) Attach End Cap

Attach the End Cap to the front of the first Monorail section as shown below and the Monorail assembly drawing.

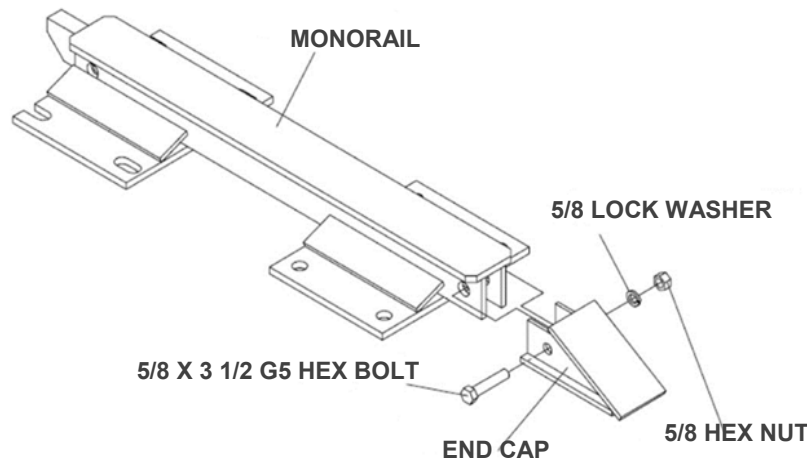


Figure 28
Monorail End Cap Attachment

9) Attach Lower Cartridge Support Brackets

Attach Lower Cartridge Support Bracket to the front and back of all Diaphragms and also to the front of the Backup as shown below.

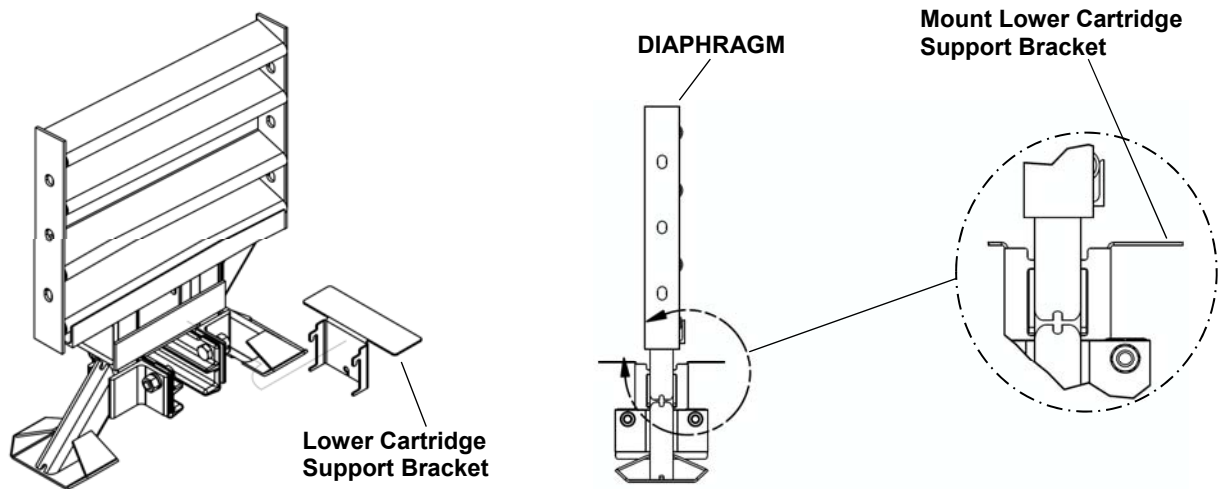


Figure 29
Lower Cartridge Support Bracket Assembly

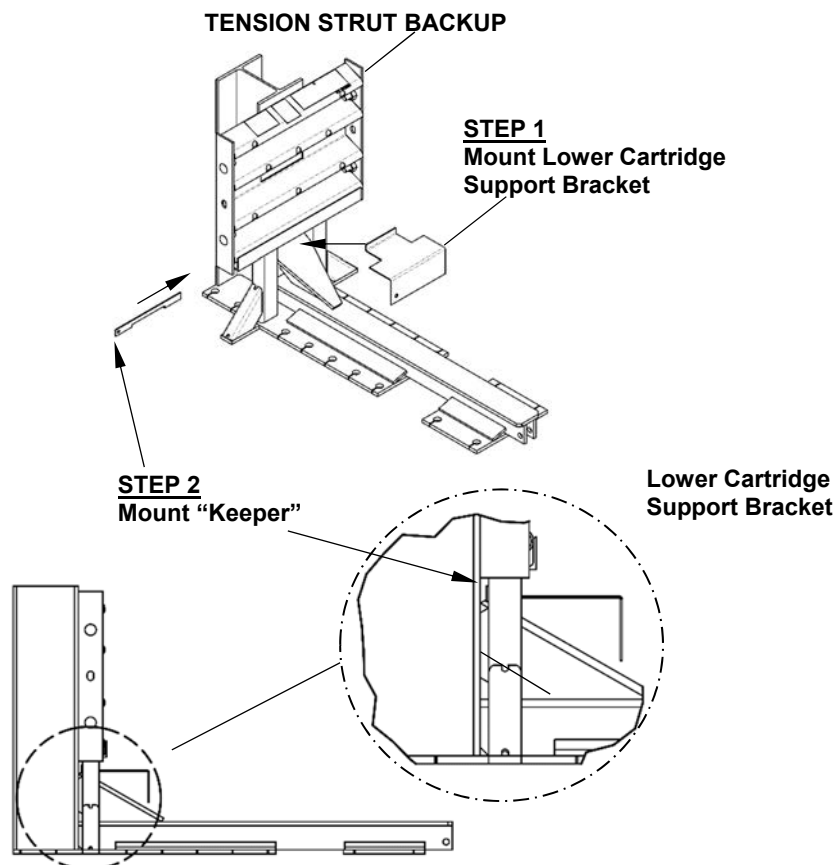


Figure 30
Lower Cartridge Support Bracket Assembly
(Tension Strut Backup)

10) Nose Assembly

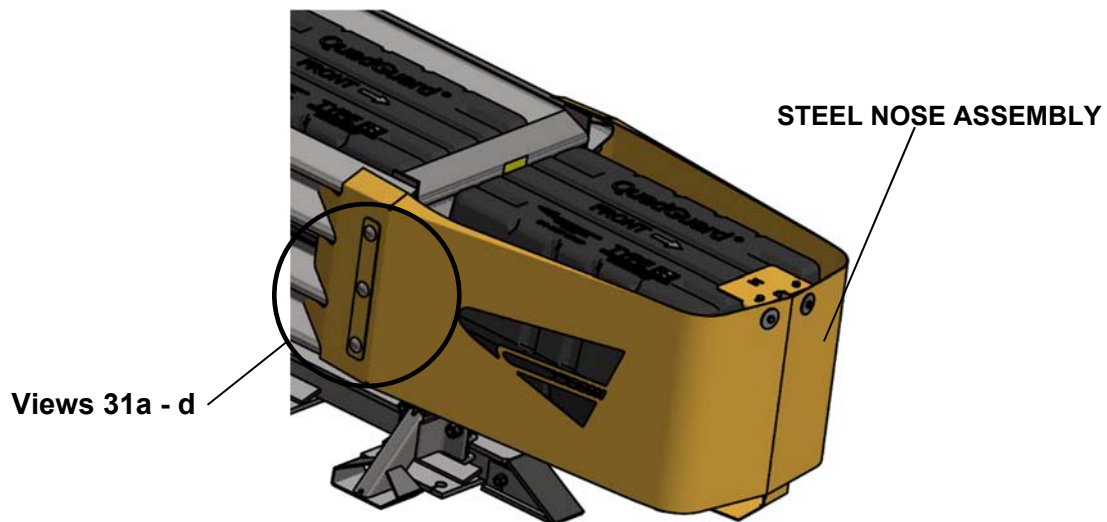


Figure 31
NOSE ASSEMBLY (p. 47)

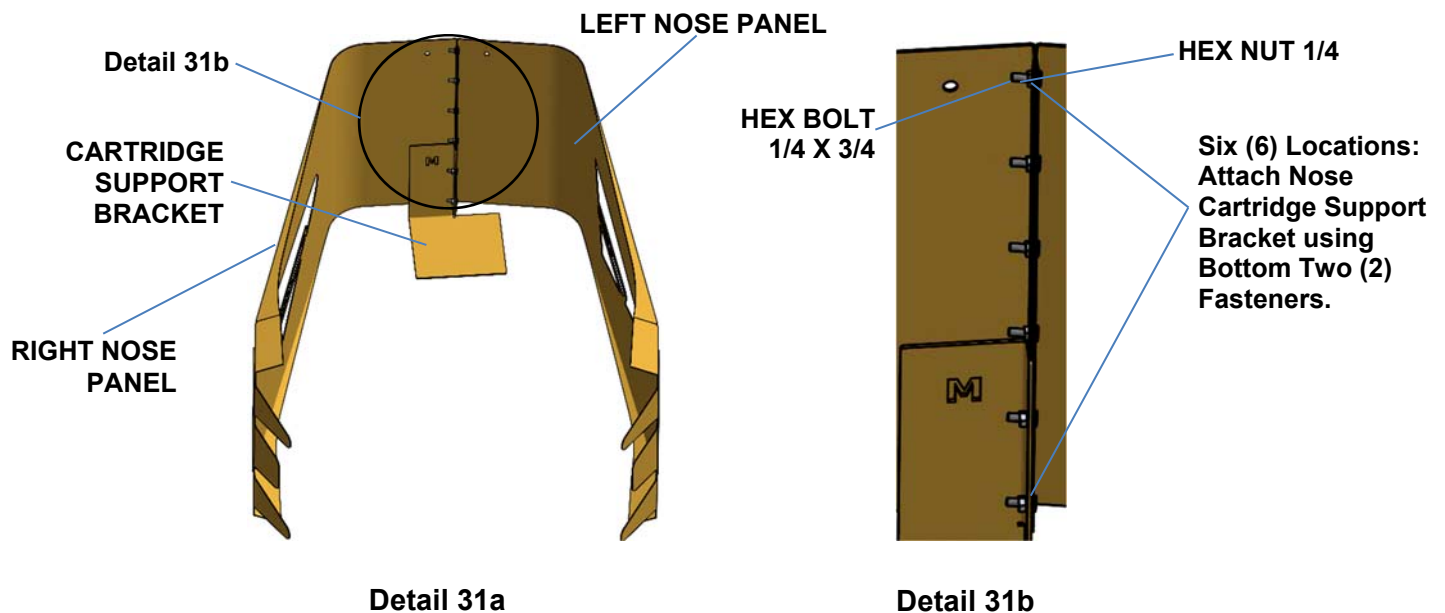
Reassemble the Left and Right Nose Panels and Cartridge Nose Support Bracket using 1/4 X 3/4 hex bolt and hex nuts (Detail 31a & 31b).

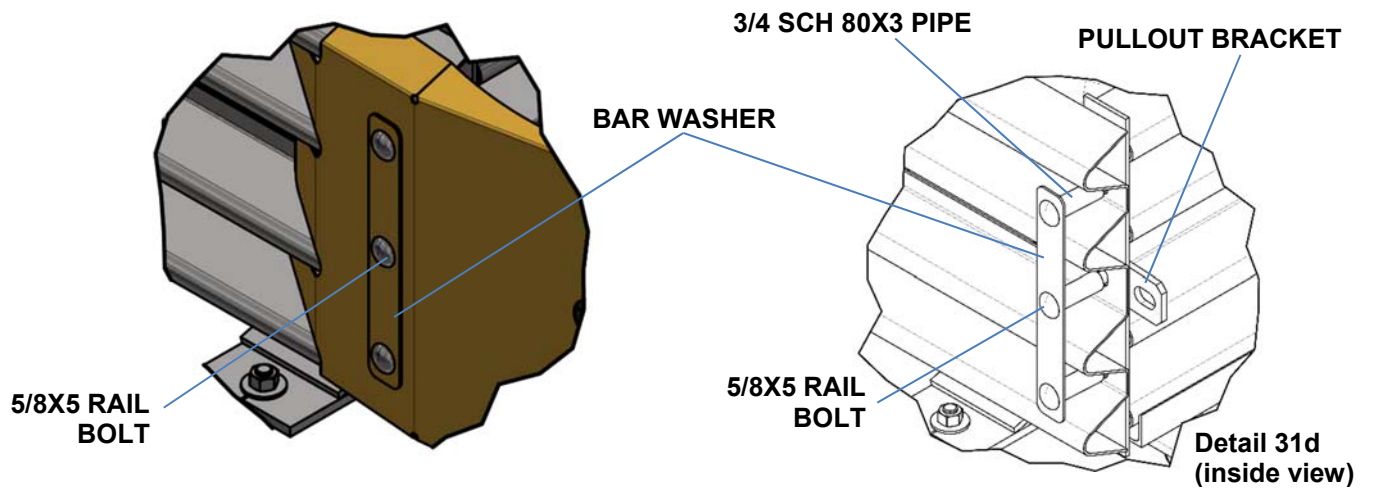
Attach reassembled Nose Assembly to front Ditchraze with 5/8 X 5 rail bolts, washers, 3/8 inch 80 X 3/4 inch pull out brackets and 5/8 hex nuts. Do not tighten at this time (Details 31c, 31d, 31e).

Adjust Nose assembly height so that front Nose is 815 mm above concrete pad. Tighten all six rail bolts and nuts.

Do not install Tire 1 Cartridge until direct mail arrival is imminent to front of site.

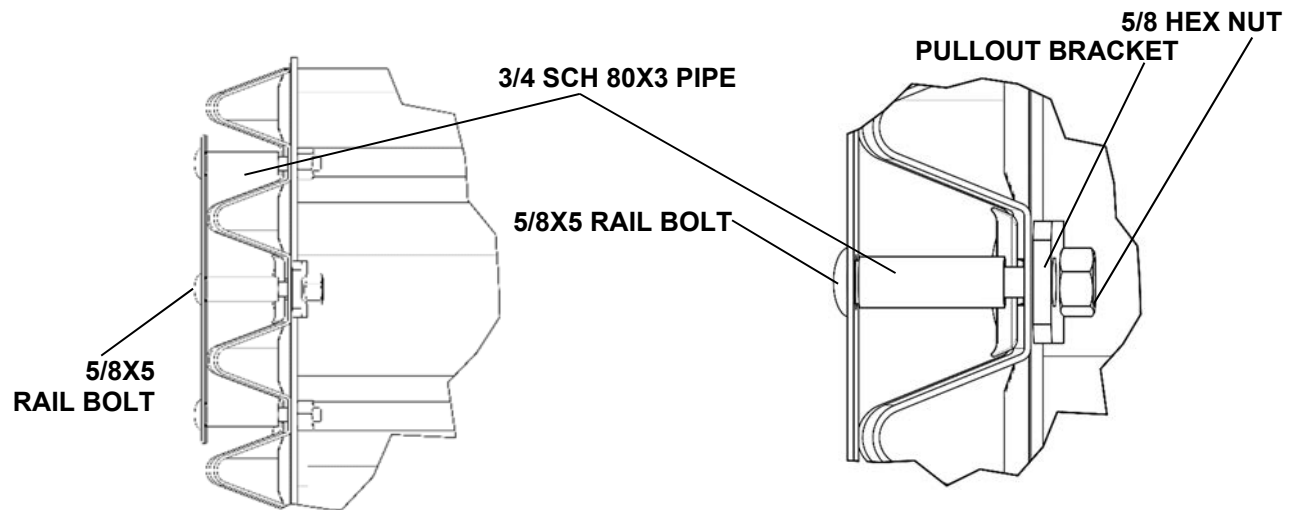
Assemble QuadGuard M Cartridge Hold Down Bracket with 3/8 X 1 hex bolts, washers and nuts (Figure 32).





Detail 31c
Fastener Assembly

Detail 31d
Steel Nose not shown for clarity



Detail 31e
End View: Nose Cover Removed

Detail 31f
Inside View: Nose Cover Cut Away

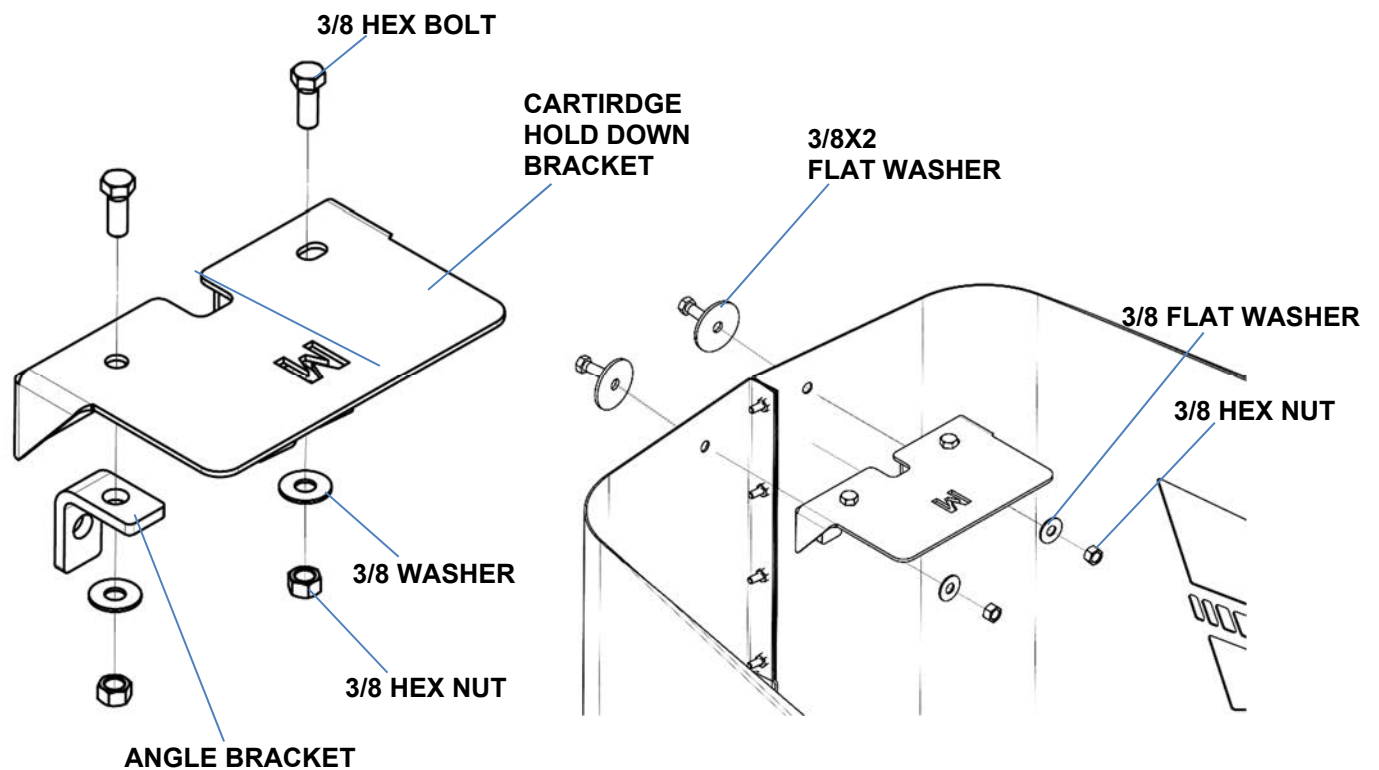


Figure 32
Hold Down Bracket Assembly

Note: Figure 33 shows proper placement of Cartridge Nose Support Bracket.

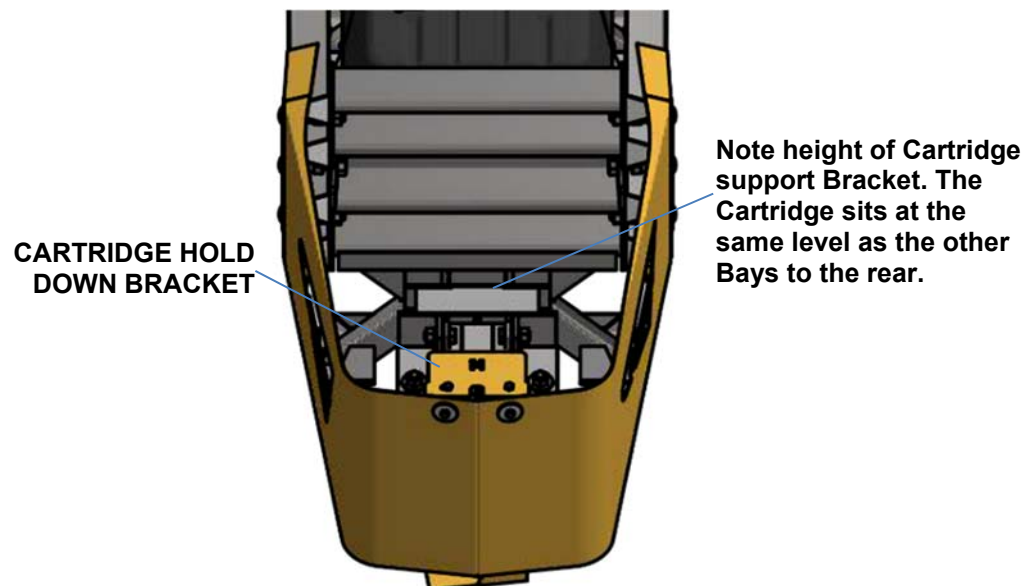


Figure 33

11) Checking the System Assembly

At this point recheck to ensure that all fasteners are properly tightened throughout the system. Check all Feeder Panels. The end of the system must be underlaid with a panel system realigned if necessary. Figure 3



Warning	
Critical Torque Requirements	
Check Studs	1
Critical Clearances	
Check Studs and Guts	2 Figure 20
Feeder Panel and 20	8 Figure 3

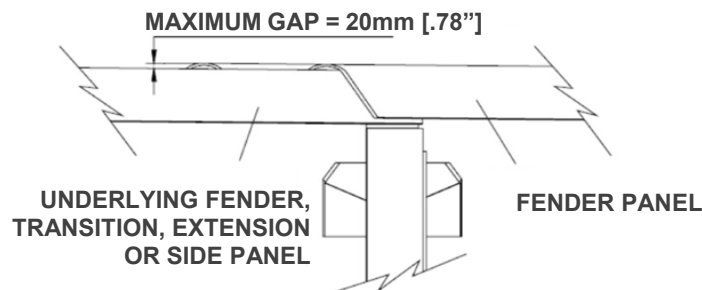


Figure 34
Fender Panel Gap

12) Cartridge Placement

The top surface of the Nose Cartridge should be horizontal. To complete the assembly, place the appropriate Cartridge in each end of the Nose section of the system. The Cartridges are placed toward the front Nose of the system. The Cartridges are placed toward the rear of the system. Figure 19



Warning: Placing the wrong Cartridge in the Nose or end could result in unacceptable crash performance per MASH criteria and cause serious injury or death to occupants and/or bystanders in the event of a vehicle impact.



Important: The QuadGuard M10 is a six-pointed star shape.

QuadGuard® M10 610mm [24"] Final Inspection Checklist

Site Location: _____

Date: _____

Inspector: _____

Refer to the QuadGuard® M10 61mm [24"] manual and / or drawing package.

- ☐ Transit panel fits in the set 11
- ☐ Clearance 5 in behind rear Feeder panels in slide 1
- ☐ Anchor bolts are torqued to manufacturer specification 1
- ☐ Top Nose panels are 815 in above concrete pad 19
- ☐ Cartridges are level and the same height in each 19
- ☐ Correct Cartridge is placed in each 19 and oriented to root system 19
- ☐ Cartridge Hold Down Bracket is secure and engaged with Nose Cartridge 19
- ☐ Perch hole and slot in Vacuum and Monitor is anchored 22
- ☐ Transit check for correct side panels at Vacuum 23
- ☐ Anchor studs are 38 in maximum above the pad 2
- ☐ Diaphragms attached to the Monitor tubes 25
- ☐ Diaphragm Shims installed between Diaphragm & Monitor tubes 25
- ☐ Each Feeder panel has a telescopic Die Scraper 2
- ☐ Mushroom Washers located in slots 2
- ☐ Monitor has End Cap attached 28
- ☐ Nose Cartridge is at the same height as 19 cartridges 30
- ☐ Feeder panel gap is 20 in for narrow systems 33
- ☐ Bolts and nuts are properly tightened 33
- ☐ System is clear of debris with a 100% final transport bolts fitted & rechecked 21

Maintenance and Repair

Inspection Frequency

Inspections for Quadguard M10 are recommended as needed based upon the extra and fact historical Drums inspections are recommended at least once a month. Wal inspections are recommended at least once a year.

Visual Drive-By Inspection

1. Check to see if there is evidence of a malfunction inspection
2. Check to see if the Cartridges are properly seated in the Support brackets. Damaged Cartridges must be replaced.



Warning: See Cartridge placement instructions on page 19.

3. Be sure the Steel Nose is in place.
- Note the location and condition of the Quadguard M10 and the date of the usual drive inspection.

Walk-Up Inspection Checklist

- Clear and dispose of debris.
- Clear and remove excessive dirt from around the Motor and Drive feet.
- Belts are tight and rust free.
- Motor Belts are securely anchored.
- Drive Belts are straight.
- All Washer Assemblies are properly seated.
- Feeder Panels and Transfer Panels should test tight against the system.
- Cartridges have not been damaged and are properly seated in their Support Brackets. To ensure the desired speed characteristics, all crushed Cartridges due to low speed impacts must be replaced.
- Make all necessary repairs as described above. See the fact instructions for the correct amount of text.
- To determine if a product should be replaced or is totally reusable, a trained engineer experienced in high speed products and directed by the DOT must be consulted.

Post-Impact Instructions



Important: Trinity Highway makes no recommendation whether use or reuse of any part of the system is appropriate or acceptable following an impact. It is the sole responsibility of the project engineers to make that determination. It is critical that you inspect this product after assembly is complete to make certain that the instructions provided in this manual have been strictly followed.

1. Deinstall appropriate traffic control devices.
2. Ensure all anchor bolts have reamed and are anchored in the road surface. Replace any loose or pulled out anchors.

The performance of the system during an angle impact depends on a properly anchored Monorail.

3. Clear and dispose of debris on site.
- Ensure the Mushroom Washer Assemblies are intact so the system can be restored to its normal condition.



Caution: Use eye protection and clothes when removing the Mushroom Washer Die Set Assemblies. Do not place fingers underneath an assembled Mushroom Washer. Parts may suddenly shift and fingers may be pinched. The Die Set is still under compression as the cut is being made. The die set is released when the cut is released from the Mushroom Washer. Do not

5. The Diaphragm Support Legs are all properly attached to the Monorail.
- Remove the Nose Assembly and attach a chain to the pullout brackets on the Diaphragm. Figure 35. Attach both ends of chain to a heavy vehicle such as a 1 ton truck.



Warning: Stay clear in case chain breaks or becomes disconnected.

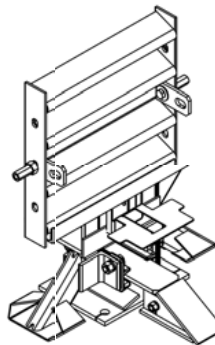


Figure 35
Pullout Brackets



Important: Slowly pull the system toward its normal length. Have someone watch the repositioning to ensure undetected damage does not cause the Diaphragms to bend or pull out improperly.

Replace all crushed Cartridges

All Diaphragms are in usable condition. Diaphragms which are cracked or have leaks must be replaced.

Each Fender Panel is properly attached with Mushroom Washer Assemblies. Damaged Fender and Transition Panels must be replaced.



Warning
Anchor Torque and Clearance Requirements
Torque Requirements adhere to the Manufacturer Specification for clearance assembly. Future 2022
Fender Panel Critical Clearances
Fender Panel Gap 20 mm

Check the **gaps between Fender Panels**. The maximum gap allowed for these peripheral parts including Fender Panels peripheral panels behind the system is 20 mm.



Important: Ensure the Mushroom Washer Assemblies are torqued to the end of the threads. If the gaps between the Fender Panels are still too large, it may be necessary to replace certain parts.

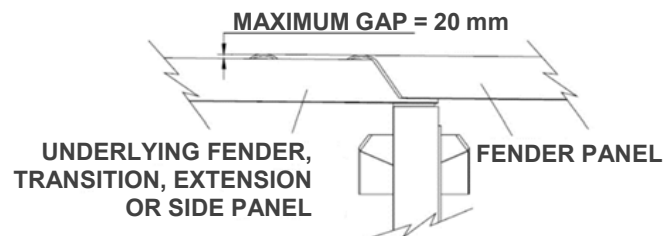


Figure 36
Fender Panel Gap

Replace all crushed Cartridges and damaged Cartridge Support Brackets. See Cartridge Replacement page 19.

Replace damaged Nose Assemblies. Attach the new Nose to the first Diaphragm. See pages 30, 32 and 38 for Nose attachment instructions.

All bolts on the system are adequately tightened.

Site is free from debris.

The Quadguard M10 is ready for use.

Parts Ordering Procedure & Drawings

Make a list of all damaged parts from the System Components section of this manual and 10% consider the following questions in the spaces provided. This information is necessary to receive the correct parts.

QuadGuard M10 Ordering Information Chart		
Description:	Choices	Fill in this section
Transition Panel Type? Side Panel and Transition Panel Types are as follows 11 include Transition Panels on both sides necessary. How to Determine Left/Right is as follows 20	<ul style="list-style-type: none"> Quad Transition Weather Guardrail Quad Transition Thru Beam Guardrail Quad Transition Safety Shape Carrier Quad Transition Single Slope Carrier Quad Transition Vertical Concrete Road Shoe None 	

Parts List(s) & Quantities

PN	Description	Tension Strut Backup	
		6 Bay	3 Bay
10102902	Rectangular Mortar 500/200	3	2
10102300	QuadGuard TS 2000 M10 Weather Decals	1	1
000001	Post Rail 5/8X5/8X30		
10102508	Post Hex 1 1/2X3/8X5		
10103002	Post Hex 3/8X2 1/2X8	2	12
10103102	Post Hex 3/8X1 1/2X5		
10102552	Post Hex 5/8X3 1/2X5	1	1
10102503	Post Rail 5/8X2	2	12
10102213	Bracket 2X1 Weather Plates	2	2
10102211	Bracket Cart Hold Down 1/2 X 1/2 X 1/2 M	1	1
10102212	Bracket Cart Support Nose 1/2 X 1/2 X 1/2 M	1	1
10102000	Bracket Cartridge Support Dashed 1/2 X 1/2 X 1/2	12	
10102019	Bracket Cartridge Support TS 1/2 X 1/2 X 1/2	1	1
10102011	Bracket Pullout 1/2 X 1/2 X 1/2	2	2
10102113	Dachra 1/2 X 1/2 X 1/2		3
10102313	Endcap Mortar	1	1
10102019	Locking Bar Cartridge Support	1	1
10102530	Mortar 1/2 X 1/2 X 1/2	12	
10102311	Mortar 1/2 X 1/2 X 1/2	1	1

PN	Description	Tension Strut Backup	
		6 Bay	3 Bay
10102312	M3 Rail 3 Bars	1	0
10102202	Nut Hex L Narr 3/8 W 1/2	1	1
10102203	Nut Hex R Narr 3/8 W 1/2	1	1
10102503	Nut Hex Hea 3/8	2	12
10102502	Nut Hex Hea 5/8	13	
10102515	Nut Hex 1/2		
10102513	Nut Hex 3/8		
10102501	Nut Hex Rail 5/8	3	22
10102002	Panel Feeder 1/2	12	
10102003	Panel Side 1/2	2	2
253	Steel Schedule 80X3		
10102520	Screw FL Hex Set 5/8X5	12	
10102903	Shim 12 X 3 5/8X8	12	
10102523	Strut D 1 1/2 X 1 1/2	12	
10102533	Stud M20 x 180	52	32
10102210	Washer R 10 X 2X1 SL TS	2	2
10102523	Washer Flat 3/8X1		
10102538	Washer Flat 3/8X2	2	2
10102500	Washer Flat 5/8X1 3/8	12	
10102538	M20 Structural Flat Washer	52	32
10102528	Washer L 3/8	2	12
10102530	Washer L 5/8	1	1
10102533	Washer Mushr 1/2 F 1/2	12	
10102539	M20 Structural Nut Hex Nut 1/2	52	32



Warning: Use only Trinity Highway parts that are specified here for assembly or replacement of the Quadguard M10. **Do not utilize or otherwise combine parts from other systems even if those systems are other Trinity Highway systems.** Such combinations have not been tested or have the needed evidence for use. Use of any alternate parts or repairs using unapproved parts or accessories is strictly prohibited.



REFERENCES		KEY	
① CARTRIDGE			
② DIAPHRAGM			
③ FENDER PANEL			
④ MONORAIL			
⑤ NOSE			
⑥ BACKUP			
	SEE TABLE		
	DESIGN SPEED		
	NOSE TYPE		
	NOSE ORDER		
	EH PROJECT		
	SALES ORDER		
	SERIAL NO.		

QUADGUARD® QGM10 SYSTEM		NARROW SYSTEM WITH TENSION STRUT BACKUP	
① CARTRIDGE			
② DIAPHRAGM			
③ FENDER PANEL			
④ MONORAIL			
⑤ NOSE			
⑥ BACKUP			
	SEE TABLE		
	DESIGN SPEED		
	NOSE TYPE		
	NOSE ORDER		
	EH PROJECT		
	SALES ORDER		
	SERIAL NO.		

REFERENCES		KEY	
① CARTRIDGE			
② DIAPHRAGM			
③ FENDER PANEL			
④ MONORAIL			
⑤ NOSE			
⑥ BACKUP			
	SEE TABLE		
	DESIGN SPEED		
	NOSE TYPE		
	NOSE ORDER		
	EH PROJECT		
	SALES ORDER		
	SERIAL NO.		

REFERENCES		KEY	
① CARTRIDGE			
② DIAPHRAGM			
③ FENDER PANEL			
④ MONORAIL			
⑤ NOSE			
⑥ BACKUP			
	SEE TABLE		
	DESIGN SPEED		
	NOSE TYPE		
	NOSE ORDER		
	EH PROJECT		
	SALES ORDER		
	SERIAL NO.		

REFERENCES		KEY	
① CARTRIDGE			
② DIAPHRAGM			
③ FENDER PANEL			
④ MONORAIL			
⑤ NOSE			
⑥ BACKUP			
	SEE TABLE		
	DESIGN SPEED		
	NOSE TYPE		
	NOSE ORDER		
	EH PROJECT		
	SALES ORDER		
	SERIAL NO.		

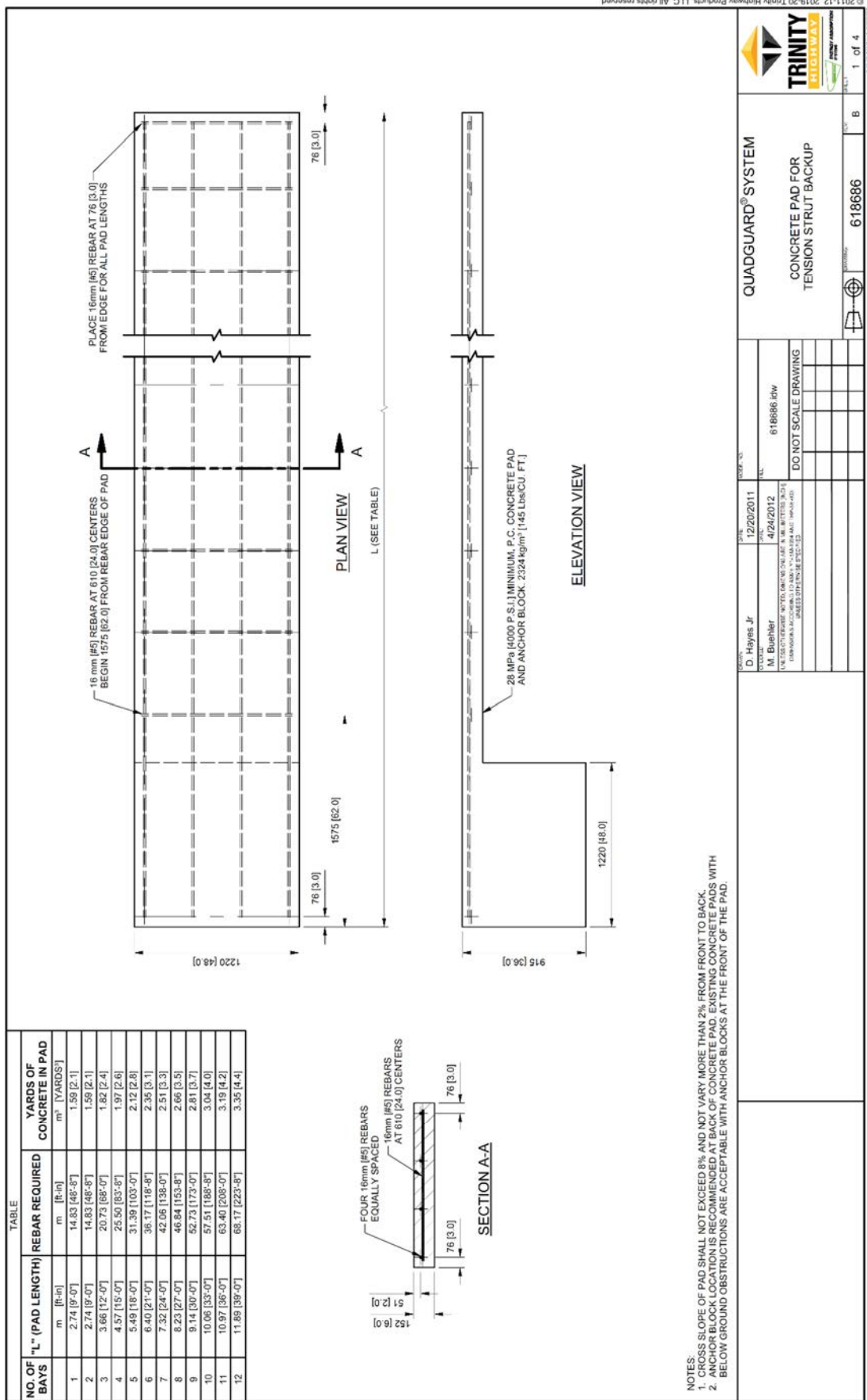
REFERENCES		KEY	
① CARTRIDGE			
② DIAPHRAGM			
③ FENDER PANEL			
④ MONORAIL			
⑤ NOSE			
⑥ BACKUP			
	SEE TABLE		
	DESIGN SPEED		
	NOSE TYPE		
	NOSE ORDER		
	EH PROJECT		
	SALES ORDER		
	SERIAL NO.		

REFERENCES		KEY	
① CARTRIDGE			
② DIAPHRAGM			
③ FENDER PANEL			
④ MONORAIL			
⑤ NOSE			
⑥ BACKUP			
	SEE TABLE		
	DESIGN SPEED		
	NOSE TYPE		
	NOSE ORDER		
	EH PROJECT		
	SALES ORDER		
	SERIAL NO.		

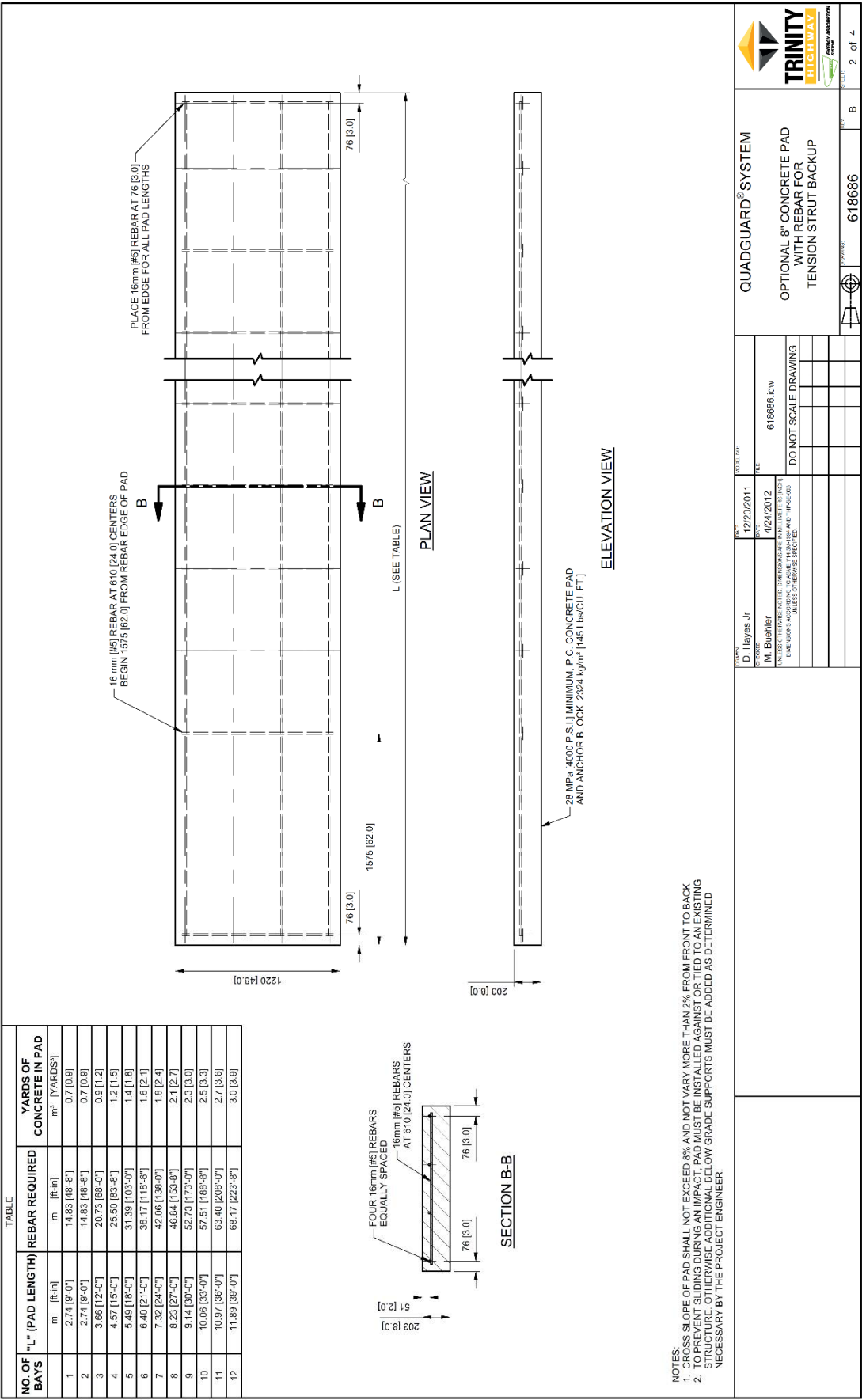
REFERENCES		KEY	
① CARTRIDGE			
② DIAPHRAGM			
③ FENDER PANEL			
④ MONORAIL			
⑤ NOSE			
⑥ BACKUP			
	SEE TABLE		
	DESIGN SPEED		
	NOSE TYPE		
	NOSE ORDER		
	EH PROJECT		
	SALES ORDER		
	SERIAL NO.		

REFERENCES		KEY	
① CARTRIDGE			
② DIAPHRAGM			
③ FENDER PANEL			
④ MONORAIL			
⑤ NOSE			
⑥ BACKUP			
	SEE TABLE		
	DESIGN SPEED		
	NOSE TYPE		
	NOSE ORDER		

QuadGuard® M10 w/ Tension Strut Backup

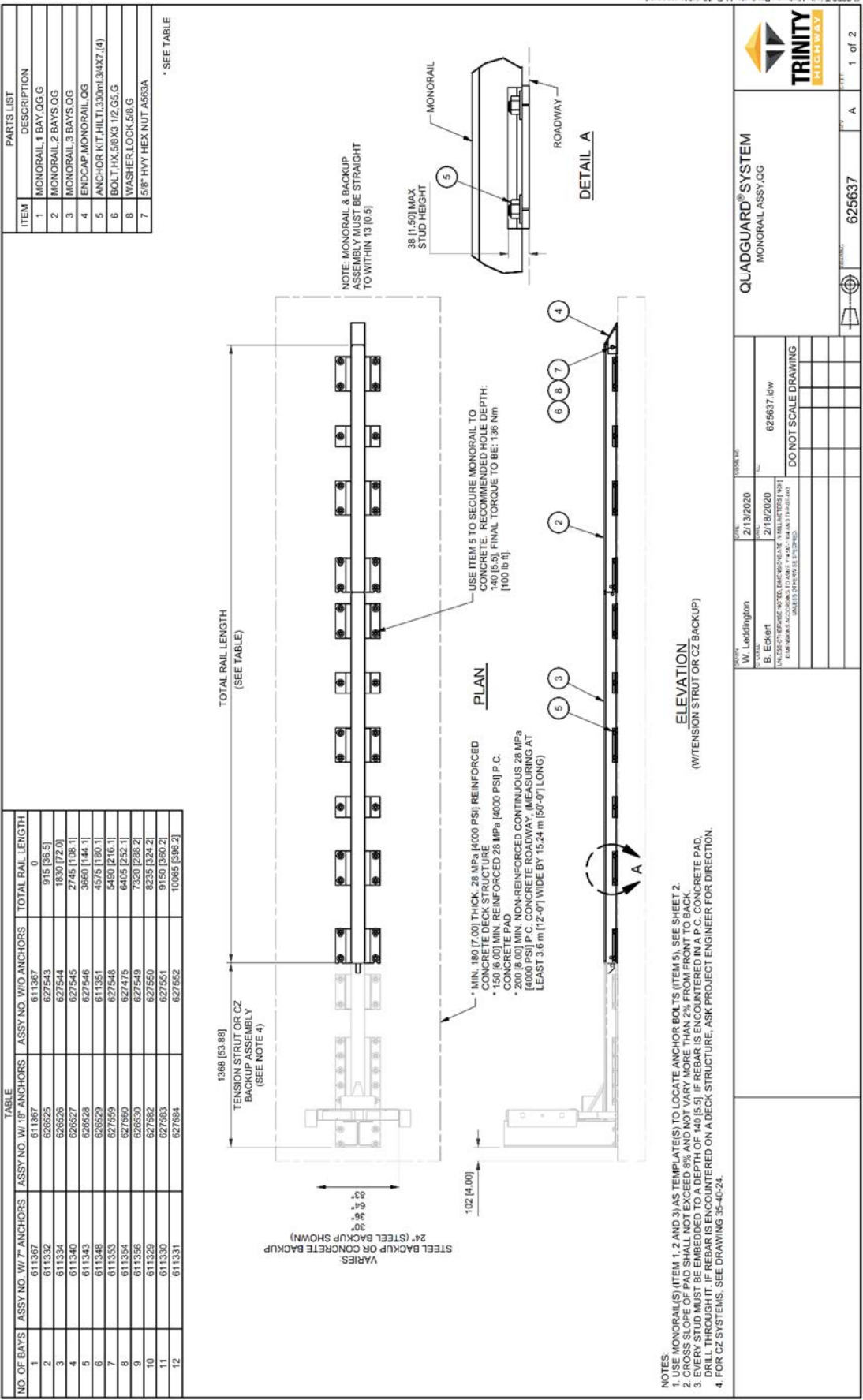


TS Concrete Pad 618686



TS Concrete Pad 8" w/Rebar 618686





NOTE:
1. QUADGUARD II REQUIRES THE SHIM KIT, SEE 814050.

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	SEE TABLE	SEE TABLE	1
2	611368	MONORAIL GUIDE QG.G	2
3	003704	3/4" HX HEX NUT A563 DH	2
4	113555	BOLT, HX, 3/4" X 2" GR. G	4
5	118089	WASHER, LOCK, 3/4" G	4
6	605446	BRACKET CARTRIDGE SUPT DIA, FOLDED QG.G	2

ASSY. NO.	ITEM 1	DESCRIPTION	WIDTH
625650	625647	DIAPHRAGM, QB, 24 QG.G	610 [24.00]
625651	625648	DIAPHRAGM, QB, 30 QG.G	760 [30.00]
625652	625649	DIAPHRAGM, QB, 36 QG.G	915 [36.00]
606810	607638	DIAPHRAGM, QB, 48 QG.G	1219 [48.00]

W. Leddington

4/13/2016

A. Van Brocklin

4/28/2016

SEE TABLE

625650.dwg

DO NOT SCALE DRAWING

DIAPHRAGM ASSY, QB, 24"

625650

1 of 3

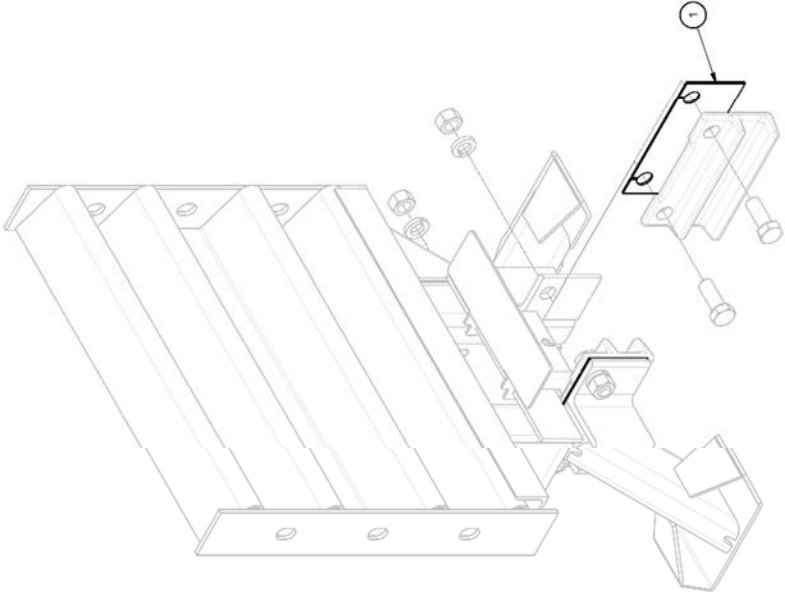
ITEM

1

PARTS LIST

DESCRIPTION

SHIM KIT



TABLE

KIT

THICKNESS

B14050

12 GA

DATE

2/19/2020

BY

D. Konfield

REVISION

627518.dwg

DO NOT SCALE DRAWING

QUADGUARD® FAMILY

SHIM KIT

TRINITY HIGHWAY

627518

1 of 1

Shim Kit 627518

© 1996, 1998, 2001, 2004, 2011, 2013, 2016 TriNity Highway Products, LLC. All rights reserved.

Fender Panel Assembly 608236

PARTS LIST

ITEM	DESCRIPTION
1	NOSE L NARROW QGII W/LOGO
2	NOSE R NARROW QGII W/LOGO
3	BRACKET CART SUPPORT NOSE QG M
4	BOLT HK 1/4X3/4 G5 G
5	NUT HK 1/4 G
6	NUT HK 5/8 G RAIL
7	BRACKET CART HOLD DOWN QG M
8	BRACKET ANGLE 2X1 WHOLE
9	WASHER FLAT 3/8X1 G
10	NUT HK 3/8 G
11	BOLT HK 3/8X1 G5 G
12	WASHER FLAT 3/8X2 G
13	BRACKET PULL-OUT QG
14	PIPE 3/4 SCH 80X3
15	5/8X5 GR BOLT A307
16	WASHER BAR 10GAX2X14 SLOTS

TABLE

ASSEMBLY	FINISH
617385	GALVANIZED
617424	YELLOW
617425	BLACK

QUADGUARD® M10 SYSTEM
NOSE ASSY-NARROW QGM

DESIGNED BY D. Kohfeld	DATE 11/19/2019
CHECKED BY B. Eckert	DATE 1/7/2020

626814.dwg

DO NOT SCALE DRAWING

Nose Assembly

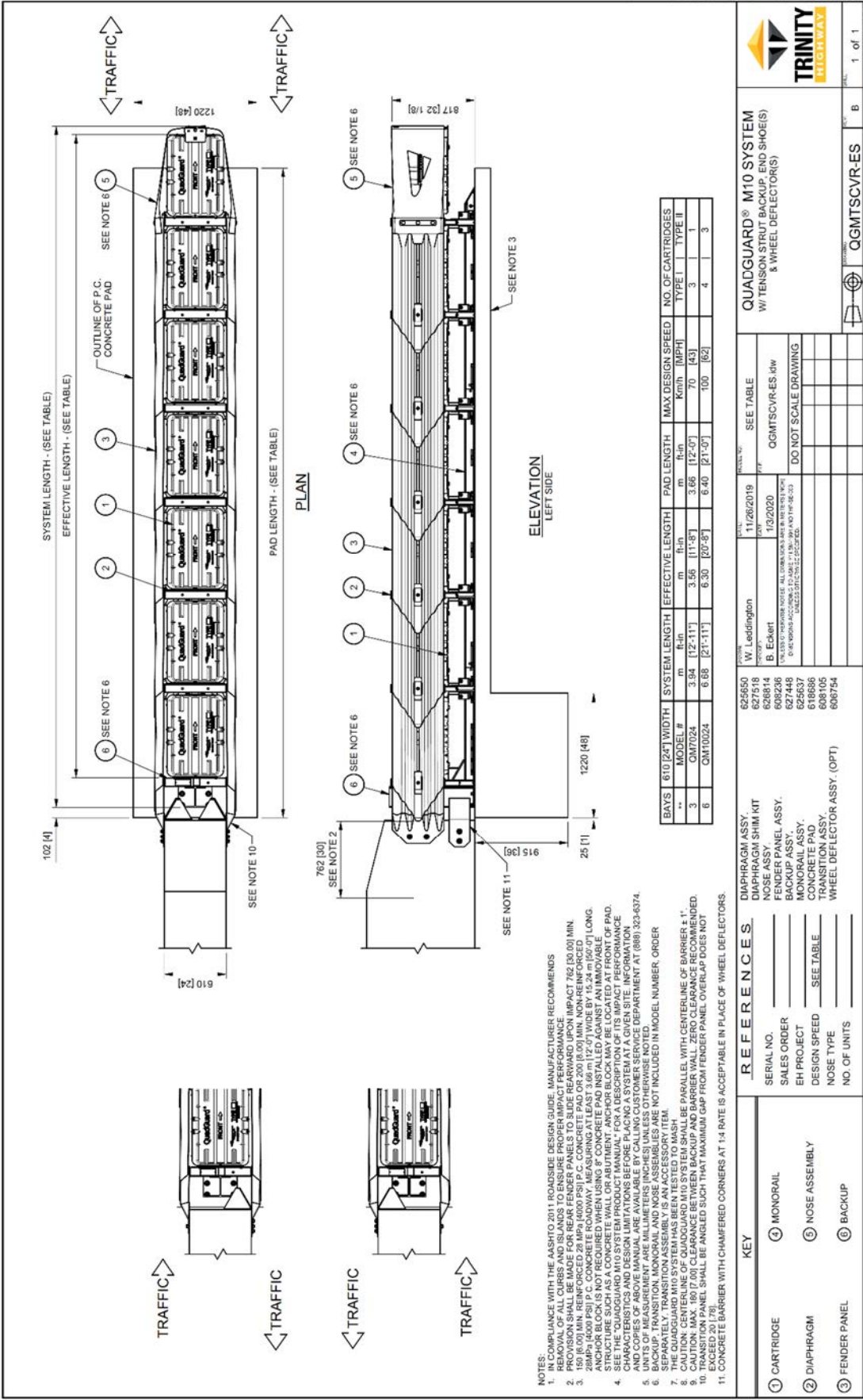
626814

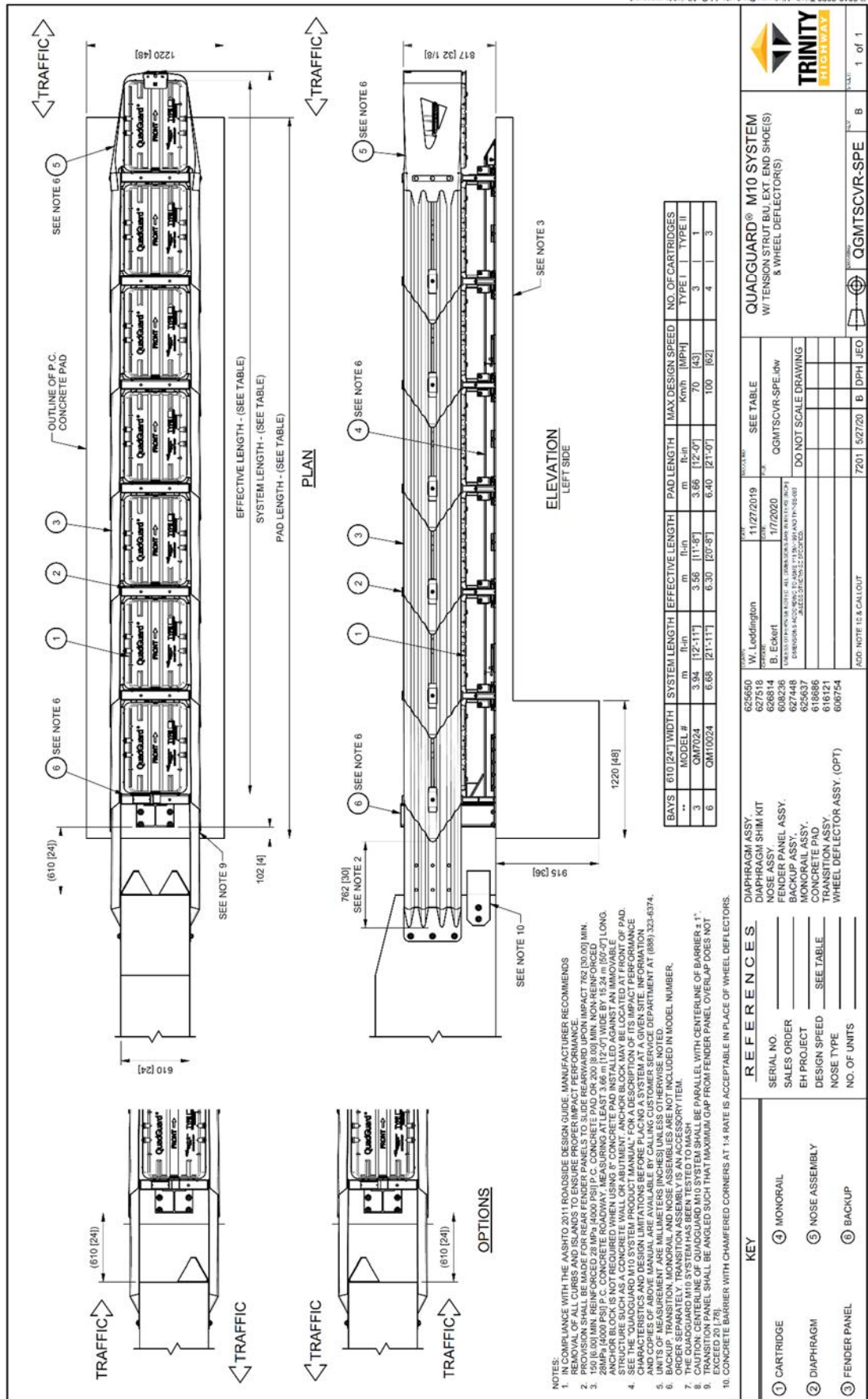
1 of 1

626814









Vertical Barrier Transition, Extended

QGMTSCVR-SPE

NOTES:

□□**T**□□□

□□**T**□□□



INGAL
CIVIL PRODUCTS
A **valmont**  COMPANY

www.ingalcivil.com.au
sales@ingalcivil.com.au
1300 446 425



TRINITY
HIGHWAY

Ahead of the Curve[®]

visit us on the web at www.trinityhighway.com. Materials and specifications are subject to change without notice. Please contact Trinity Highway to confirm that you are referring to the most current instructions.

www.trinityhighway.com

888.323.6374 (USA) +1 214.589.8140 (International)